TRANSACTIONS
of the
American Philosophical Society
Held at Philadelphia for Promoting Useful Knowledge

VOLUME 75, Part 2, 1985

Optical Corrections in the Sculpture of Donatello

ROBERT MUNMAN

TRANSACTIONS
of the
American Philosophical Society
Held at Philadelphia for Promoting Useful Knowledge

VOLUME 75, Part 2, 1985

Optical Corrections in the Sculpture of Donatello

ROBERT MUNMAN
Associate Professor of the History of Architecture and Art
University of Illinois at Chicago

THE AMERICAN PHILOSOPHICAL SOCIETY

Independence Square, Philadelphia

1985

Copyright © 1985 by The American Philosophical Society

Library of Congress Catalog
Card Number 84-71080
International Standard Book Number 0-87169-752-1
US ISSN 0065-9746

To my Mother
and the memory
of my Father

CONTENTS

Page
List of Illustrations vii
Preface xi
Introduction 1
Part I: Sculpture in the Round 10
Part II: The Reliefs 30
Bibliography of Frequently Cited Sources 59
Illustrations 61
Index 90

Illustrations

1. Giovanni Pisano, Miriam, Museo dell'Opera del Duomo, Siena 61
2. Giovanni Pisano, Miriam, Museo dell'Opera del Duomo, Siena 61
3. Donatello, St. John the Evangelist, Museo dell'Opera del Duomo, Florence 62
4. Donatello, St. John the Evangelist, Museo dell'Opera del Duomo, Florence 62
5. Donatello, St. Mark, Or San Michele, Florence 63
6. Donatello, St. Mark, Or San Michele, Florence 63
7. Donatello, St. George, Museo Nazionale, Florence 64
8. Donatello, St. George, Museo Nazionale, Florence 64
9. Donatello, St. George, Museo Nazionale, Florence 65
10. Donatello, St. George, Museo Nazionale, Florence 65
11. Donatello, St. Louis, Museum, S. Croce, Florence 66
12. Donatello, St. Louis, Museum, S. Croce, Florence 66
13. Donatello, "Beardless Prophet," Museo dell'Opera del Duomo, Florence 67
14. Donatello, "Beardless Prophet," Museo dell'Opera del Duomo, Florence 67
15. Donatello, "Bearded Prophet," Museo dell'Opera del Duomo, Florence 67
16. Donatello, "Bearded Prophet," Museo dell'Opera del Duomo, Florence 68
17. Donatello, Abraham and Isaac, Museo dell'Opera del Duomo, Florence 68
18. Donatello, Abraham and Isaac, Museo dell'Opera del Duomo, Florence 68
19. a, b, c. Donatello, "Beardless Prophet," "Bearded Prophet," and Abraham and Isaac (modern copies), Campanile, Florence 69
20. Niches on the north side of the Campanile, Florence 69
21. Donatello, "Lo Zuccone," Museo dell'Opera del Duomo, Florence 70
22. Donatello, "Lo Zuccone," Museo dell'Opera del Duomo, Florence 70
23. Donatello, "Jeremiah," Museo dell'Opera del Duomo, Florence 70
24. Donatello, "Jeremiah," Museo dell'Opera del Duomo, Florence 71
25. a, b. Donatello, "Lo Zuccone," "Jeremiah," (modern copies), Campanile, Florence 71
26. Donatello, David, Museo Nazionale, Florence 72
27. Donatello, David, Museo Nazionale, Florence 72

28. Donatello, David, Museo Nazionale, Florence 73
29. Donatello, David, Museo Nazionale, Florence 73
30. Donatello, David, Museo Nazionale, Florence 73
31. Donatello, David, Museo Nazionale, Florence 73
32. Donatello, Tomb Slab of Bishop Giovanni Pecci, Cathedral, Siena 74
33. Donatello, Tomb Slab of Bishop Giovanni Pecci, Cathedral, Siena 74
34. Donatello, Tomb Slab of Archdeacon Giovanni Crivelli, S. Maria in Aracoeli, Rome 74
35. Tomb Slab of Unknown Friar, Museo Bardini, Florence 75
36. Tomb Slab of Unknown Friar, Museo Bardini, Florence 75
37. Donatello, The Feast of Herod, Baptistry, Siena 76
38. Donatello, The Feast of Herod, Baptistry, Siena 76
39. Donatello, The Feast of Herod, Baptistry, Siena 77
40. Donatello, The Feast of Herod, Baptistry, Siena 77
41. Donatello, The Feast of Herod, Baptistry, Siena 77
42. Donatello, The Cavalcanti Annunciation, S. Croce, Florence 78
43. Donatello, The Cavalcanti Annunciation, S. Croce, Florence 78
44. Donatello, The Cavalcanti Annunciation, S. Croce, Florence 79
45. Donatello, Wall and Pendentive Tondi Reliefs, Old Sacristy, S. Lorenzo, Florence 79
46. Donatello, St. Mark, Old Sacristy, S. Lorenzo, Florence 80
47. Donatello, St. Mark, Old Sacristy, S. Lorenzo, Florence 80
48. Donatello, St. John, Old Sacristy, S. Lorenzo, Florence 81
49. Donatello, St. Luke, Old Sacristy, S. Lorenzo, Florence 81
50. Donatello and shop, Madonna and Child with Angels (The "Madonna del Perdono"), Cathedral, Siena 82
51. Donatello and shop, Madonna and Child with Angels (The "Madonna del Perdono"), Cathedral, Siena 82
52. Urbano da Cortona, Memorial to Cristoforo Felici, S. Francesco, Siena 83
53. Urbano da Cortona, Memorial to Cristoforo Felici, S. Francesco, Siena 83
54. Donatello, The "Resurrection" Pulpit, S. Lorenzo, Florence .. 84
55. Donatello, Descent into Limbo, from the "Resurrection" Pulpit, S. Lorenzo, Florence 85
56. Donatello, Descent into Limbo from the "Resurrection" Pulpit, S. Lorenzo, Florence 85
57. Donatello, The Resurrection from the "Resurrection" Pulpit, S. Lorenzo, Florence 86
58. Donatello, The Resurrection from the "Resurrection" Pulpit, S. Lorenzo, Florence 86
59. Donatello, The Ascension (Christ's Appearance to the Apostles) from the "Resurrection" Pulpit, S. Lorenzo, Florence 87

60. Donatello, The Ascension (Christ's Appearance to the Apostles) from the "Resurrection" Pulpit, S. Lorenzo, Florence 87
61. Donatello, The Ascension (Christ's Appearance to the Apostles) from the "Resurrection" Pulpit, S. Lorenzo, Florence 87
62. Donatello and shop, Pentecost, from the "Resurrection" Pulpit, S. Lorenzo, Florence 88
63. Donatello, The Martyrdom of St. Lawrence, from the "Resurrection" Pulpit, S. Lorenzo, Florence 89
64. Donatello, The Martyrdom of St. Lawrence, from the "Resurrection" Pulpit, S. Lorenzo, Florence 89

PREFACE*

There is, surprisingly, an element of controversy about the subject of this essay. I say surprisingly because in spite of the wide recognition of optical corrections in several of Donatello's works, few scholars have accepted the sculptor's general use of these adjustments, and some have rejected the idea that such visual corrections can be found in his art at all.[1] In addition, a recent, lavishly illustrated study of the artist by Frederick Hartt, the first to treat this subject at any length, seems to preclude the need for the present study. For the first of these points—the existence and importance of such elements in Donatello's work—the following text will, I hope, speak for itself. As for the second—the necessity of taking up the subject once again—it can only be said that while Hartt's study presents and confirms a number of worthwhile ideas, the reliability of many of its arguments is mitigated on the one hand by a reliance on insufficient photographic evidence, and on the other hand by a neglect of several important pieces of historical and visual testimony.[2] This missed opportunity and the scholarly conflict it partly represents thus underscores the need for a reevaluation of this significant aspect of Donatello's sculpture.[3]

---

* I should like to express my gratitude to the University of Illinois at Chicago for its financial support of the research leading to this work, and to Professor Charles M. Rosenberg for a number of valuable suggestions. *N.B.* A bibliography of frequently cited sources and their abbreviations in the notes will be found at the conclusion of this article. Unless otherwise noted, all discussed works of art are in Florence.

[1] Most notably Janson; see note 33.

[2] Hartt, 1973. Hartt has been reviewed in depth by J. Pope-Hennessy (*The New York Review of Books*, 24 January, 1974, 7ff.) and Dixon, 1976. It is not, of course, the purpose of this essay to re-review Hartt's book. However, because his is the only extensive treatment of Donatello's use of optical corrections, it will be necessary not only to point out those instances where I concur with his conclusions but, unavoidably, those several instances where I feel his arguments are incorrect or incomplete.

[3] The two monographs on Donatello that have appeared in recent years do not consider the problem of optical corrections to any appreciable degree. The earlier and more innovative of these is A. Rosenauer's *Studien zum frühen Donatello—Skulptur im projektiven Raum der Neuzeit (Wiener Kunstgeschichtliche Forschungen III)*, Vienna, 1975 (review by H. W. Janson, *Art Bulletin*, 59, 1 [1977]: 136–39). The thrust of Rosenauer's book differs from that of the present study but offers some parallels in its observations. As his title suggests, Rosenauer's work is concerned with Donatello's invention of a new concept of space and especially the relationship between figure and niche (best seen in the bronze St. Louis from Or San Michele). Although the theoretical foundations of Rosenauer's analysis are not always compelling (cf. Janson's review noted above), he does call attention to a number of visual elements in Donatello's work that, I believe, are corroborated by the present findings. In some ways the subject under consideration here may be thought of as a special case of Rosenauer's more general proposition (though using different means and reaching different conclusions). As

It should be said at the outset, however, that conclusive archival or literary evidence of Donatello's specific intentions to use optical corrections has not yet surfaced and is not likely to. In addition, while it would be comforting to find a distinct pattern in Donatello's application of optical corrections throughout his career, we will find that the wide variety of such problems faced by the sculptor resulted in experimental, often unique solutions that fit no straight-line development. Finally, since we must deal with the illustration of three-dimensional optical effects by two-dimensional, photographic means, only a simulation (and then a single simulation) of the "real" appearances of things can be offered.

While these problems must be acknowledged, it must also be added that there is considerable evidence for Donatello's use of optical corrections that scholars (with the partial exception mentioned above) have largely ignored. This neglect seems to have several origins. It may come in some degree from an unwillingness to accept the idea that such visual effects, developed only in the sixteenth century and not common until the Baroque, were even possible in the early Renaissance. Conversely, such optical experiments have been specifically denied Donatello (in a kind of unconsciously developed reverse bias) in order to avoid exaggerating his numerous innovations. But significant responsibility for this situation must also be given to the tyranny of the professional photograph. For it is a common experience that a definitive reproduction of a work of art, particularly of sculpture, becomes the ultimate scholarly reference when the monument is far from sight. The use of photography by the art historian has, of course, advantages and disadvantages too obvious to mention. But in the photography of sculpture there is the additional problem that the historian tends to rely on a single image, or a very few, that not only takes the work out of context, but that usually presents it as a strictly frontal image.[4] Generally this is a manageable problem. Occasionally, however, it leads to the photograph taking precedence over the appearance of the actual

---

an example, in Rosenauer's analysis of the Coscia tomb in the Florentine Baptistry (61), he suggests that the grouping (the "*Kom-position*") of the work's individual elements is possible only with the presumption that there is a spectator who, through the act of seeing, actually creates the visual connections between them. Now, this is an observation that could well apply to the many optical corrections discussed below, but the Coscia monument, to my knowledge, contains no such adjustments. Thus here, as throughout his book, Rosenauer considers the relationship of the viewer to the work of sculpture, but not from the standpoint of the work's adjustments made specifically to *compensate* for the viewer's predetermined position.

More recent than Rosenauer's work is J. Poeschke's *Donatello—Figur und Quadro*, Munich, 1980. Poeschke takes issue with Rosenauer's approach to Donatello and, though he brings up several interesting ideas on style and chronology (and offers some less-than-satisfying attributions), essentially he provides more traditional stylistic analyses of Donatello's work that rarely touch on the subject of the present essay.

[4] See, for example, Passavant, who criticizes Mackowsky's analysis of Verrocchio's David, not so much because it was based on a photograph (of a cast), but because the photo was taken from the wrong angle (see G. Passavant, *Verrocchio: Sculptures, Paintings and Drawings*, Edinburgh, 1969, 15).

object, not only because it is more convenient, but because it slowly becomes the "truer" image. Naturally, such a preference for the reproduction is rarely recognized (or admitted), but it does occur, and with art of difficult access, it occurs regularly.[5]

But if the camera must be used by the historian, clearly it should simulate the viewer's eyes as closely as possible. And though there are many reasons why this cannot be accomplished fully, objects should at least be photographed from the point of view from which their authors intended they be seen. For such views not only help to recall the *in situ* appearance of the original works, they also remind us that our recollections of the originals often have been falsified by "corrected" illustrations that, from sheer repetition, have taken on canonical status. On the other hand, because the viewer's position, or at least his eye, is rarely absolutely fixed, there can rarely be a single, "correct" view of a given work of art and, naturally, no such claim is made from the illustrations used here. It is, however, photographs like these that, in the absence of the original sculpture, may best suggest something of the visual and psychological effects their subjects were meant to convey. With this in mind, the present study, by its arguments and its photographic evidence, may reopen the discussion of optical corrections in the work of Donatello and, perhaps, in that of some of his contemporaries and followers as well.

---

[5] An odd, but revealing example of this is found in Carli's discussion of Donatello's Feast of Herod in Siena. After reminding the reader that Donatello's relief was once seen in the light of a now closed window of the baptistry to the left of the work (and illustrating several details in such a light), Carli then reproduces the standard Alinari photograph of the whole relief with its lighting from the right (Carli, 1967, pls. II–V).

INTRODUCTION

We should begin by considering two questions that are fundamental to our study: what is meant by optical corrections in sculpture, and, in the absence of hard documentary evidence, to what degree is it possible to prove the artist's conscious intention to use them? At first glance these questions might appear superfluous since, as mentioned, there is wide agreement that optical corrections were part of Donatello's technical repertoire.[6] But given the clear-cut opinion of some scholars that Donatello, or indeed anyone before the later fifteenth century, could not have been even aware of such devices, a clarification of these issues seems necessary.

Optical corrections in sculpture take basically two forms that for convenience we may term the passive and the active. In both cases the purpose is to compensate for the artist's (and thus the subsequent observer's) perception of a discordant appearance in a work that would be caused by its being seen under particular, often unavoidable, physical conditions. Typically, these conditions force the viewer to see the work from a high, an oblique or, most commonly, a low point of view. When some variation in the observer's location is allowed by the conditions of the site, optical compensation, if still deemed necessary, is made for the most obvious or convenient viewing position. (The problem of such movable viewpoints will be taken up below).

The passive form of compensating for such conditions is that of composing a figure or relief to accentuate certain qualities (such as grace, drama, or even simple visibility) that would be reduced for the observer by the work's necessary location. A well-known example would be Verrocchio's exaggeration of the facial features, in particular the eyes, of the high placed portrait of Bartolommeo Colleoni. Likewise, numerous Gothic and Renaissance wall tombs contain recumbent effigies above the spectator's line of sight that have been tilted forward for better visibility.[7] On the other hand, a work like Bernini's David, although designed to be most effective from a particular view, does not reveal even passive optical corrections since the figure can be seen from near eye-level and from almost any angle. Similarly, there is sculpture, such as that from the Parthenon pediments, that was originally seen from a steep, low angle, but was designed with an eye-level, ideal point of view (and, in this particular case, even finished in the back). Such work may well appear more impressive from a low viewpoint, but this does not in itself indicate the presence of compensatory devices; the human form, in art and reality, often appears more dramatic from far below merely because of its strong foreshortening and the psychological suggestions of its superior spatial relationship to the viewer. Thus, while the presence of passive optical adjustments may be difficult to prove because their identification is opened to subjective interpretation, such effects still often may be recognized and differentiated from a naturally dramatic appearance due to the sculpture's position alone.

---

[6] At least in the modern literature; cf. note 33.

[7] Among the major medieval examples can be cited Arnolfo di Cambio's tomb of Guillaume Cardinal de Braye (d. 1282), S. Domenico, Orvieto, and Tino di Camaino's monument for Charles of Calabria (d. 1328), S. Chiara, Naples. The technique is found at least as late as Desiderio da Settignano's tomb for Carlo Marsuppini (d. 1453), S. Croce, Florence, and the tombs of Marco (d. 1511) and Giorgio (d. 1540) Corner, SS. Apostoli, Venice (school of Pietro Lombardo).

The second, active form of optical correction is more extreme in that it uses actual distortions of the object to create a desired effect through natural foreshortening. This technique, most often employed in painting in strongly exaggerated forms, is known as anamorphosis.[8] Its use demands that an object be seen from a specific position so that optical perspective can take effect, in this way producing a corrected, normal-appearing image. The corollary to this, of course, is that the image must be seen from a predetermined viewing position in order to make its maximum illusionistic effect or, in many instances, even to be legible. A famous example of such an image is the anamorphic Death's Head in Holbein's Ambassadors (National Gallery, London), a detail that is recognizable only from a sharply oblique angle.[9] Thus, while anamorphosis is based on the laws of optical perspective, in one sense it is the opposite of painted foreshortening since the illusion of depth in the latter is created by a contracted image that suggests an expanded one, while anamorphosis demands a lengthened image that is designed to be read as normal through true optical foreshortening. In painting, depending on the kind of image and the result desired, one has the option of using either technique (or both, since anamorphosis almost always uses foreshortening in some degree). But while foreshortening has always been with us, anamorphosis is a relatively late development and its most well-known, and dramatic use was to counteract sharp curves on illusionistic Baroque ceilings.[10] (The technique was also often used as a novelty, even, with a number of small pictures, to the point of artificially fixing the viewing position by forcing the observer to peer into a cylindrical mirror set in the center of a wildly distorted, circular image that is corrected in its reflection.)[11] For sculpture in the round, however, normal foreshortening is created by the natural laws of optical perspective, and anamorphic distortion, even after its principles were widely understood in the early sixteenth century, is rare. This rarity may stem from a particular artist's ignorance of, or lack of interest in, the principles involved, a real or perceived lack of necessity to make such adjustments, or simply the artist's refusal to compromise the ideality or naturalism of his work. But there can be little doubt that the theoretical use of compensatory distortions in sculpture was known by the early Quattrocento.

---

[8] The basic study on this subject is J. Baltrušaitis, *Anamorphoses, ou magie artificielle des effets merveilleux,* France, 1955, revised ed. 1969. See also F. Leeman, *Hidden Images: Games of Perception, Anamorphic Art, Illusion from the Renaissance to the Present,* New York, 1976.

[9] Baltrušaitis, *Anamorphoses,* 91ff.

[10] Recently it has been shown that Bernini's Cornaro chapel (S. Maria della Vittoria, Rome) contains a parallel effect in an architectural perspective. The low reliefs representing receding colonnades behind the two groups of Cornaro family members (in their "box seats" on the flanking walls of the chapel) are not only designed to be seen from an angle, but to be seen from a particular position in front of the main altar. From that location the entablature of the colonnade appears to continue the horizontal line of the real architecture of the chapel's main wall, rather than to recede at an angle (as it does from a frontal view and even from low but incorrect viewpoints). See I. Lavin, *Bernini and the Unity of the Visual Arts,* New York, 1980, 1: 97f.

It is, in fact, well known that such ideas were found in antiquity and that at least two of three probable sources—Plato, "Damianus," and Vitruvius—were available and even familiar in fifteenth-century Italy. The least known of these writers is the so-called "Damianus." In his "Optics" he discusses the correct method of optically adjusting the proportions of both real and painted architecture, ending with a parallel analysis of colossal sculpture that is close to, and probably derived from, a similar description of Plato:

> And it is also a procedure of this sort which brings about the appearance of commensurability in his creation for a maker of colossal statuary, so that the work has a satisfactory form for the vision and is not, in a futile fashion, worked out according to real [as opposed to apparent] commensurability. For works set up at a great elevation do not appear to have the form which they in fact have.[12]

More certainly known to the Renaissance were the related passages from Plato himself (*Sophist*) and Vitruvius (*Ten Books on Architecture*). On several occasions, for example, Vitruvius[13] refers to the necessity of adjusting the proportions of architectural members to correct the false impression one may receive from seeing them in various physical circumstances. And

---

[11] Baltrušaitis, *Anamorphoses*, 133ff., and Leeman, *Hidden Images*, passim. The earliest provable instance of drawn anamorphoses, ca. 1485, is credited to Leonardo da Vinci. The Codex Atlanticus, fol. 35 verso *a* clearly shows a child's head and an eye anamorphically distorted (an eye in normal perspective accompanies the distorted image). The technique was certainly commonly known by the early years of the sixteenth century, as indicated by the anonymous anamorphic portrait of Charles V (1533) and the elaborate woodcuts of Erhard Schoen (mid to late 1530s). See Baltrušaitis, *Anamorphoses*, 15ff., Leeman, *Hidden Images*, 10ff., and particularly C. Pedretti, *The Literary Works of Leonardo da Vinci*, Edinburgh, 1977, 149f.

[12] R. Schöne, *Damianos Schrift über Optik mit Auszügen auf Geminos*, Berlin, 1897, 28–30, quoted from J. J. Pollit, *The Ancient View of Greek Art. Criticism, History and Terminology*, New Haven/London, 1974, 239f. (The dates of "Damianus" are unsure; according to Pollit [96] the passage quoted here may actually be Damianus and thus dated ca. fourth century A.D., but it may also be the work of either Heron of Alexander [late Hellenistic] or Geminus [ca. 70 B.C.].) See also D. Summers, *Michelangelo and the Language of Art*, Princeton, 1981, chaps. IX ("Donatello's Abacus"), and X (*"Giudizio dell'occhio"*), 364–79.

[13] Vitruvius, *The Ten Books on Architecture* (trans. M. H. Morgan), Cambridge, 1914, III, V, 9; III, III, 13; and particularly VI, II, 1–4. (The first of these passages was referred to by Alberti in his own *Ten Books* [VII, IX].)

Plato, in making a broader philosophical point, uses an analogy of artists giving optical corrections to works of great size:

> Stranger: One art that I see contained in it is the making of likenesses. The perfect example of this consists in creating a copy that conforms to the proportions of the original in all three dimensions and giving moreover the proper color to every part.
>
> Theaetetus: Why, is not that what all imitators try to do?
>
> Stranger: Not those sculptors or painters whose works are of colossal size. If they were to reproduce the true proportions of a well-made figure, as you know, the upper parts would look too small, and the lower too large, because we see the one at a distance, the other close at hand.
>
> Theaetetus: That is true.
>
> Stranger: So artists, leaving the truth to take care of itself, do in fact put into the images they make, not the real proportions, but those that will appear beautiful.[14]

Plato, of course, like the later "Damianus," refers to the colossal figure as a special case. But the general idea of proportional adjustments in sculpture could easily be inferred from either author. Thus, while it is not necessary to postulate a classical precedent for the practice of active optical correction in the Renaissance, such precedents, at least in literary forms, did exist.

With a firmer idea of what constitutes optical corrections in sculpture, we may now take up the second, and for this study the equally important question proposed earlier: to what degree is it possible to prove the conscious intention of the sculptor to use these devices? Toward this end we may consider a case study of such problems in the figure of Moses by Michelangelo.

In his article on Moses *dal di sotto in sù* E. E. Rosenthal[15] establishes three main points to demonstrate that optical corrections were applied to Moses: one, the figure was originally to be placed at a specific height above the spectator and at the corner of a free-standing monument; two, the figure shows compositional elements and proportional distortions that are justified and corrected only by its being viewed in that particular position; and three, Michelangelo almost certainly carved his larger figures, and specifically the Moses, with the work in a prone position, thus enabling him to gauge the effect the figure would give from its destined placement above eye-level.[16]

---

[14] Plato, *Sophist*, 235d, e–236, quoted from E. Hamilton and H. Cairns (eds.), *The Collected Dialogues of Plato including the Letters*, Princeton, 1973 (*Sophist* trans. F. M. Cornford). For evidence of the works of Plato available in fifteenth-century Florence, see R. R. Bolgar, *The Classical Heritage and its Beneficiaries: From the Carolingian Age to the End of the Renaissance*, New York, 1964, 483ff.

[15] E. E. Rosenthal, "Michelangelo's Moses, *dal di sotto in sù*," *Art Bulletin*, 46, 4 (1964): 544ff.

[16] Ibid., note 58.

This last point, in fact, usually can be accepted as a "given" in Renaissance practice since both technical considerations and the evidence of medieval and Renaissance illustrations of sculptors at work indicate that the execution of larger figures in prone or angled positions was the rule rather than the exception. It is the natural corollary of this that a larger relief would be modeled in an angled, "table-top" position, similarly allowing for the gauging of a low point of view.[17] (The smaller relief can, of course, be easily seen from such an angle at the artist's convenience.) Lacking evidence to the contrary, it is reasonable to assume that Donatello learned and practiced these same sculptural techniques.

Rosenthal's arguments on the intended appearance of Moses are convincing, but there is a fourth consideration that he does not discuss but that is implied by his conclusions and, indeed, is necessary to them. That is, in order to eliminate the possibility that the distorted appearance of Moses is normal to Michelangelo's style, we must know of other authentic works by the artist that were intended to be seen at eye-level and that do not show similar optical adjustments. In short, a control group is required for confirmation of the artist's intention to adjust his figures optically. For while there are works of art that are so distorted that they are explainable only as examples of anamorphosis (even as an isolated detail by an unknown artist, Holbein's Death's Head could hardly be interpreted in any other way), most optical corrections in sculpture can be recognized as purposeful only when we have knowledge of the work's original location and the control of other autograph, undistorted examples.

We may apply these considerations to well-known examples of medieval sculpture that have been interpreted as precedents for Donatello's use of optical corrections. These are the tomb effigy of Wolfhart von Roth by Master Otto (d. 1302) in the Cathedral at Augsburg[18] and the upper façade figures for the cathedral of Siena by Giovanni Pisano (1284–96). Erwin Panofsky has described the face and neck of the von Roth effigy as

> intentionally lengthened in such a manner that the prelate's countenance discloses its serene beauty only to the beholder standing at the foot of the tomb and thus observing it in perspective foreshortening—a device anticipating the methods of such Quattrocento sculptors as "Simone Ghini," Donatello and Pollaiuolo but apparently unique in Northern medieval art.[19]

Although this interpretation poses the obvious problem of corrective elongation appearing only in the head and neck of the effigy, the figure does seem to fulfill two of our three main requirements for determining intention to use optical distortions: its known location requires an oblique view, and the noticeable distortion of the head appears to be corrected by a specific, logical viewing position. But while there seems to be a clear proportional "improvement" in the effigy's head and neck when it is seen from the foot of the tomb, there is no particular reason that the observer must assume that viewing position.[20] Equally important, not only was the figure seemingly unique in its time (as Panofsky suggests), but there are no other known works by Otto to which the effigy may be compared as a control. Therefore, we cannot be sure that Otto intended these lengthening effects for the purpose they now seem to serve, particularly as bodily elongation as a stylistic trait is so commonly found in northern Gothic sculpture.[21]

---

[17] For a recent discussion of such optical adjustments in reliefs of Jacopo Sansovino, see D. Stott, "*Fatte à Sembianza di Pittura:* Jacopo Sansovino's Bronze Reliefs in S. Marco," *Art Bulletin,* 64, 3 (1982): 370ff.

[18] The figure was cast, as its inscription tells us, by one Master Konrad.

[19] E. Panofsky, *Tomb Sculpture,* New York, 1964, 58. Panofsky (figs. 224, 225) shows the effigy's head in both direct and foreshortened views. A straight-on, full-length view and a half-length profile of the effigy are illustrated in J. Baum, *Gotische Bildwerke Schwabens,* Augsburg, 1921, 110, 111. (I do not know what work by Pollaiuolo Panofsky had in mind.)

When, on the other hand, we consider the Sienese cathedral figures of Giovanni Pisano, we find a very different situation. The high location of these works and the resulting low angle of observation is, of course, known. In addition, a number of these figures, most noticeably the famous Miriam, sister of Moses, show distinct distortions of movement and proportion that go far beyond normal Gothic practice in Italy (figs. 1, 2). The physically impossible elongation of Miriam's neck and the ninety degree twist of her head are not perceptible as such from the street, yet these very details give her a strong, but apparently normal movement to her right.[22] Equally important, no such extreme optical adjustments are seen in Giovanni's own large scale, low placed figures, although they can be paralleled in some details of the above-eye-level reliefs in his Pistoia and Pisa pulpits where the viewer's upward angle of observation calls for the same type of optical compensation.[23] Naturally, the importance of this for the present study is that it offers a clear precedent for similar, if more sophisticated effects later created by Donatello.[24] For whether Giovanni was consciously or instinctively giving optical distortions to the cathedral façade figures, the difference in the appearance of these statues as seen from the ground and straight-on could not have been lost on anyone willing to ascend to the figures' level, something, as Hartt suggests, that would have been entirely normal for Donatello to have done.[25] Indeed, there may be some ultimate significance in that some of Donatello's most effective applications of optical corrections are found in works for Sienese patrons.

---

[20] It should also be noted that had the figure been designed consistently for an angled point of view, the hands, which are at the waist and horizontal to the viewer's line of sight, should not have been lengthened. The long hands and fingers do, of course, fit the general lengthening of the figure strictly as an element of style.

[21] The elongated jamb figures found so commonly on Gothic Cathedral façades should not be interpreted as having been given optical corrections. Not only can they be observed easily from various angles and distances but, more to the point, their elongation is not consistently different from other figures at different heights and various angles of view, nor is it internally consistent over time. That is, the more normal human proportions that evolve with stylistic change (such as the figures of the south transept porch of Chartres, in particular the famous St. Theodore), reveal that the distortions were based on factors other than anamorphic correctives for the viewer's position.

[22] This effect has been noted frequently, most precisely by White: "Certain distortions at Siena, such as the giraffe-like, forward-curving neck which thrusts the head of the Miriam into special prominence, or the unusually low-set knees of the David or the Solomon, seem to betray a desire to offset the effects of steep foreshortening in figures to be placed high over the spectator's head." J. White, *Art and Architecture in Italy: 1250–1400*, Harmondsworth, 1966, 73. Other figures by Giovanni for the Siena Duomo façade show similar distortions, i.e. Habbakuk and Plato (cf. G. Mellini, *Giovanni Pisano*, n.d. [1970?], Milan, figs. 74–9, 87–91, 105–110; all in the Museo dell'Opera del Duomo and replaced by copies on the Cathedral façade).

[23] For example, the sharply twisted heads of the mothers (center and upper left) in the Pistoia Massacre of the Innocents. White (ibid., 78) has also suggested that "the germ of the evocative distortion in the angel Gabriel may well lie in the seemingly technically motivated

With these definitions and precedents in mind, we may now return to the subject of this study with a firm but flexible set of criteria for the judgment of Donatello's use of optical corrections: 1. the work's original location is known; 2. the work reveals visual distortions that are corrected when it is seen *in situ* from the observer's normal point of view; 3. the artist's eye-level works do not contain such distortions and thus can act as a "control group" for those that do.

In the application of these criteria to Donatello's sculpture our first consideration should be that of the control group, since once it is determined it need not be reestablished. That is, once it is clear that undistorted figures, normal human proportions and accurate perspective (insofar as accuracy is possible in relief) are to be found in Donatello's work, the exceptions may be examined as such, without continual referral to the norm of a control group beyond the knowledge that it exists. That such a group should exist seems self-evident, but this is not the case. For while many of Donatello's figures do not show any noticeable distortion of movement or proportions, it is surprising to realize that among those works whose original position is firmly documented, there is only one that is known to have been at eye-level: the bronze doors in the Old Sacristy in S. Lorenzo. And, of course, even here only some of the reliefs (those of the second row from the top) are seen straight on.

In spite of this extraordinary lack of documented eye-level works, there are sculptures of Donatello that can be used legitimately to augment the reliefs of the Old Sacristy doors as a control. The most important of these are the tondi on the pendentives of the same room, representing scenes from the legend of St. John the Evangelist (fig. 45).[26] These reliefs are high

---

dislocations in the necks of figures like the Miriam, designed to stand high up on a façade." Many other examples could be cited, including the similarly distorted pinnacle figures from the Pisa baptistry. These contortions are, of course, part of Giovanni's style and were not designed exclusively as optical corrections. But the impetus for the development of such devices clearly must come from Giovanni's need to give greater action and drama to these figures given the viewing conditions under which he knew they would be seen. That such a need may have been largely unconscious does not speak against its reality. (In addition to the remarks of White, see also Pope-Hennessy, *Italian Gothic Sculpture,* London, 1971, 9ff., and M. Ayrton, *Giovanni Pisano: Sculptor,* New York, 1969, 106.)

[24] As noted, for example, by Hartt, 1973, 13.

[25] Ibid., 15.

[26] See also Janson, 1957, pl. 193.

above the observer, but as they are set into the pendentives at an angle of about forty-five degrees, they are perpendicular to the line of sight of the upward-looking visitor standing near the opposite corner of the sacristy. These reliefs are thus designed to be seen straight-on, with the figures undistorted and the perspective of the architecture (with one extraordinary exception to be discussed later) converging on a nearly centrally placed horizon line. (That such ideal viewpoints were determined by the convenient angle of these scenes could not be better demonstrated than by comparing them to the relief tondi of the Evangelists on the Sacristy's four walls [figs. 45–49]: all of these are about the same height as the pendentive reliefs, but because of their unavoidable angle to the viewer's line of sight, both the Evangelists and the lectern-tables on which they write are designed with strong *sotto in sù* effects.) If, moreover, we allow ourselves to consider works by Donatello that are not documented as to original location but which show designs and functions that would logically call for approximately eye-level placement, the Lille Feast of Herod and the so-called "Atys-Amorino"[27] might also serve as indicators of Donatello's norms for undistorted compositions and figural proportions.

The foregoing may seem to suggest that all of Donatello's sculpture known not to have been placed at eye-level would, by their absence from this short list, necessarily show optical corrections. This, of course, is not the case since a number of high- or low-placed works by the artist have been treated as if seen from an ideal point of view. This would include the top and lowest three rows of the Old Sacristy doors, the reliefs of paired saints over these doors, the Cathedral Cantoria, the effigy of Baldassare Coscia in the Baptistry, and the equestrian portrait of Gattamelata in Padua.[28] Given that most of Donatello's major works were to be placed above eye-level and that many were optically adjusted accordingly, these examples (and there are others) seem to be exceptions in need of explanation. In actuality, in each case where the original position of the work is known, there are mitigating factors—a flexible lateral viewing position (at times a full 360 degrees), for example, or the negligible effect of such adjustments on small figures seen from substantial distances or, more commonly, on figures in low relief—that could have made optical corrections seem, or be, unnecessary. But equally important, there is clear evidence that Donatello was willing not only to experiment with different conceptual solutions to the same problem, but on occasion allowed himself variances within the same project that, in a strictly perceptional sense, may seem inconsistent. The best example of this is found in the previously mentioned tondi of the Legend of St. John the Evangelist in the Old Sacristy where, in spite of the identical viewing conditions for all four reliefs, two are given *sotto in sù* constructions.[29] Like Masaccio's great Trinity (S. Maria Novella), which presents figural viewpoints based as much on iconographic hierarchy as on linear perspective, the viewpoints of the four S. Lorenzo tondi are controlled more by their narrative than by a need for optical uniformity.[30] In the sculptor's late pulpits in the same church we shall see another example of such priorities, but it is evident from the Old Sacristy tondi alone that Donatello did not allow his imagination to be controlled by a need for consistency for its own sake.

---

[27] Ibid., pls. 182, 237, 238a, b.

[28] Ibid., pls. 216, 224; 87; 245–50. But see below, 43f., and note 121 for the minor visual compensations for the height of the Florentine "Cantoria," and 28f. for considerations on Gattamelata's size as an optical factor of its design. For the bronze effigy of Coscia (Donatello's only contribution to the tomb), the only applicable optical correction would have been the passive one of tilting it forward. The figure's upper torso is, in fact, canted forward very slightly. However, a stronger tilt may have been seen as an archaic (or undignified) device, or simply inadequate, given that Coscia's prone figure would still be difficult to see at its height of some 14 feet.

---

[29] See White, 1951, 49, and 1967, 152ff.; A. Parronchi, *Studi su la dolce prospettiva*, Milan, 1964, 281ff. (originally published as "Le due tavole prospettiche del Brunelleschi," *Paragone*, 107, Nov., 1958, 108, Jan., 1959); Janson, 1957, 136; Seymour, 1966, 115. White (1968, 154) remarks that "in three of the four scenes from the life of St. John the verticals in fact converge." While White also notes that "the convergence is not scientific, in that it does not centre on a single point," in actuality a close examination of the reliefs shows that besides the Assumption, only St. John's Vision on the Isle of Patmos reveals significant convergence (specifically in the trees). The debatable scene is that of the Liberation from the Boiling in Oil, the architecture of which does not show the clear convergence seen in the Assumption. The battlements on the upper left of the relief are all parallel to one another and to the vertical members of the architecture on the right. The architecture of the scene is not in true plumb throughout all of its details, but in no meaningful way does its perspective show vertical convergence (cf. Janson, 1957, pls. 210–12). In addition, White (1967, 192) also remarks that "of the four S. Lorenzo roundels, only one is to be viewed from below" (that is, the Assumption; but see note 126).

[30] See note 126.

PART I: SCULPTURE IN THE ROUND

The most often cited example of Donatello's use of optical corrections is found in one of his earliest and best known works, the seated figure of St. John the Evangelist from the façade of the cathedral of Florence (figs. 3, 4).[31] This piece originally occupied a niche to the right of the main portal, about ten feet (at its base) from the level of the cathedral porch.[32] One can see the degree to which students have accepted the presence of optical corrections in the St. John in that comparative low and straight-on photographs of it have long appeared even in standard art history survey texts. Thus, while it is hardly necessary to reiterate here all of the frequently-noted differences between the two views, it would be useful to recall some of Seymour's remarks on the contrast:

> If seen face on . . . the St. John presents a disappointing, puzzling design. One would discover a long-bearded head, the glance directed unaccountably sideways; then an unconscionably elongated torso; finally, stunted legs swathed in overcomplicated drapery. Seen from below, on the other hand, . . . the figure organizes into a much more understandable unity. The proportions come far closer to nature. The torso shortens and assumes structure. The folds of drapery over the knees and lower legs take on shape and directional movement. The head, foreshortened, suggests energy and nobility. . . . The organization of masses is thus directed by a principle which is much less tactile and concerned with measurable solids than optical and illusionistic. . . . The awkward juxtaposition of planes at right angles in the lap simply disappears with the flattening of the figure by actual measurement, though not in visual effect, in its dimension of depth.[33]

---

[31] Documented commission of 1408 (Janson, 1957, 12f.). (Unless otherwise noted, Janson's dates for Donatello's sculpture are indicated throughout this essay. While there are not inconsiderable problems of dating several of these works, these difficulties do not appreciably affect the arguments offered here.)

[32] The Duomo façade is, of course, a nineteenth-century addition and the original niches are no longer extant. The heights of the niches from the pavement can, however, be estimated from the evidence of the drawing made of the façade (before 1587), probably by Bernardino Poccetti (Museo dell'Opera del Duomo). For this, and a discussion of the original order of the four Evangelist figures as well as illustrations of them *di sotto in sù,* see R. Munman, "The Evangelists from the Cathedral of Florence: A Renaissance Arrangement Recovered," 207–17.

[33] Seymour, 1966, 56. In addition to Seymour, several scholars, including Hartt, Dixon, Rosenthal, and others, have noted the optical corrections used by Donatello in his St. John. The major dissentor (as opposed to those who do not bring up the issue) is Janson who, by omission, rejects such elements in the figure because of his objection to the idea that any such adjustments can be detected in the sculptor's works. (Janson's basic arguments on this point are put forward in his discussion of St. Mark from Or San Michele, 1957, 20; see also my discussion below and notes 45 and 48.)

The success of Donatello's conception of St. John can be best appreciated by comparing the figure to its companion pieces seen in the same low viewpoints.[34] It is, naturally, a subjective judgment as to which, if any, of these works approaches the effectiveness of St. John in such a view. But it is probably safe to say that Niccolò Lamberti's St. Mark, with its cascades of lower drapery overpowering the upper torso, is the figure that reveals the least awareness of Donatello's innovations. Bernardo Ciuffagni's St. Matthew comes closest to matching Donatello's optical effects, but this is obviously a result of the sculptor appropriating his major compositional elements from Donatello's St. John in the first place.[35] Nanni di Banco's fine St. Luke is not noticeably improved from a lowered viewpoint, and the head (like those of Mark and Matthew, in different degrees) appears too small. In contrast, Donatello avoided this visual problem in St. John by the use of a high cap of hair and a luxuriant beard to cover the neck. The saint's head is not actually much larger than those of his companions, but it seems so and thus, from below, appears in better proportion to his body. (Interestingly, Michelangelo later used a similar technique, in the form of a heavy hood, to give the appearance of greater size to the head of Mary in the Vatican Pietà, thereby suggesting that her head was in proportion to her large body while keeping her face in proportion to that of Christ.) This, plus the slanted position of St. John's legs, his long torso and the lowered bench (shorter by about 5 percent than Luke's), all work to give the figure its odd appearance from head-on and its pyramidal, and thus more imposing, composition when seen from below (fig. 4).

Since St. John is such a clear example of Donatello's use of optical adjustment, it is convenient to turn from its formal qualities to focus on its relationship to the inseparable problem of variable viewpoints. The observer's low, upward line of sight is evident here, but it is also clear that the figure could have been seen from some lateral angles and from various distances.[36] Because such viewing possibilities are almost always found in Donatello's work, we must ask whether or not the sculptor would have expected the observer to take a precise position in order to obtain a particular foreshortened effect. For St. John, because of the shallowness of the figure's torso (which, with its flat back, is in effect a high relief), and its seated position deep within its narrow niche, a full view would have made a frontal position almost mandatory.[37] Indeed, with the work removed from its niche it can be seen that the closer one moves to either side of it, the flatter and more awkward it appears.[38] But while these circumstances are not typical for Donatello's other niche figures (none of which are seated), the design of St. John shows the artist adjusting his work to the physical limitations of the site. The frontal view of the figure, however, makes for a different problem. For unless one assumes at the outset that it looks correct only from a specific point of view (which, of course, begs the question), one must contend with the problem of the varying distances and angles from which it was visually accessible. And although the viewer's line of sight was always from below, the total angle of view could have been considerably narrowed by observing the figure from some distance. Did Donatello disregard this circumstance or did he assume that his work would be seen primarily from a predominant position and correct it optically on that basis? And if we assume the latter, would it imply that Donatello gave less attention to subsidiary views of his sculpture?

---

[34] See Munman, 1980, figs. 1–4, 9–12.

[35] Ciuffagni's figure was commissioned in 1410, two years after the others had been begun, and his borrowing from all three of his predecessors is evident (cf. Seymour, 1966, 57f., and Munman, 1980, note 1).

[36] As Dixon (1976, 80) points out in his harsh, but fair criticism of Hartt. As I hope to make clear, however, Dixon is incorrect in his suggestion that because St. John (like Michelangelo's Moses) is a seated figure, it is a "very special case." Certainly one evident case of optical corrections does not prove continued use of such devices, but the presence of these corrections in a given work strongly implies that the sculptor was aware of their function and advantages for other works as well. Indeed, logic would suggest that Donatello, having successfully demonstrated the benefits of this technical and artistic tool very likely would have used it frequently in his long and varied career. Moreover, while Dixon points out that the observer is not compelled to view Donatello's works from an absolutely fixed point of view, he also notes that "there is a singular perversity that insists on photographing all sculptures from a point directly in front of them, even when, as is often the case with Donatello, they were clearly placed high by a sculptor peculiarly concerned with optical corrections." This indicates an acceptance of (if no reference to) figures other than St. John as showing such optical corrections. More problematic, however, is Dixon's suggestion that such considerations are likely valid only for high placed figures. For while absolute height

A partial answer to these questions lies in the relation between viewer and object. With rare exceptions, the observer does not, and cannot be expected to remain rigidly in one predetermined position even when such a best viewing point has been calculated by the artist. Common experience shows us that the effectiveness of an optically corrected work of art may

---

is clearly important in the foreshortened appearance of any figure, the optical distortions used by Donatello are more a function of angle than distance. It is true that a figure just above eye-level will show greater effects of optical foreshortening than one, at the same angle, seen at a significant distance. And, of course, a figure may be given exaggerated features or a roughened surface to offset its distant position. But in general it is the angle, not the distance, for which compensation must be made. In terms of perspective, the strongest optical distortion of a given figure is produced not by the observer's distance point, but rather his angle of view due to the work's position above or below his horizon. Were this not the case, the commonly reproduced photograph, taken from below, of the seated St. John the Evangelist (fig. 4) would be unacceptable simply because it was taken (of necessity, because of the figure's present location) from a third or less of its original viewing distance. By the same token, an eye-level figure seen at, say, twenty feet looks proportionally smaller than it does at ten feet, but only slightly changed by foreshortening (its lower extremities are at a somewhat steeper angle to the eye; cf. note 48 below); the same figure even slightly above (or below) eye-level (and thus one's horizon) is distinctly distorted by foreshortening since its angle of observation is radically altered (cf. note 63 below). It might also be noted that the depth to which a figure stands in its niche is important for visual corrections only insofar as the niche itself may cover part of the figure from a particular low viewpoint. But as long as the work is on a pedestal (as are all of Donatello's niched figures) or otherwise visually clear of the frame of its enclosure, its deeper placement in, or extension from, its niche has no perceptible effect on its appearance in terms of its possible optical corrections.

[37] See Munman, 1980, fig. 8, left.

[38] Cf. Janson, 1957, pls. 12a, b.

not be changed appreciably by slight changes in the viewing position. Anyone who has experienced the illusionistic vault decoration of S. Ignazio in Rome knows how strong Pozzo's illusion remains even when it is seen from well away from the conveniently marked center of the nave. The size (and fixed distance) of Pozzo's ceiling is, of course, significantly different from that of a life-sized statue. But even when such a figure has been adjusted to be seen from a specific location, that location is still almost always an area rather than an immoveable point, and the size of that area may depend not only on the figure's size, but its accessibility. The logic of this was recognized by Leonardo da Vinci, the very artist who has been credited with the earliest known anamorphic drawings.[39] In a discussion of how one should view colossal statues, Leonardo brings up the conception of the "appropriate distance" from which they should be seen. He assumes, of course, that one would stand directly in front of such figures, and (in Panofsky's recapitulation) tells us that the distance one stands from the work should be "short enough to permit detailed observation, yet long enough to avoid those violent distortions entailed by a view at close range."[40] In other words, the "appropriate distance" may vary within reasonable limits, but it is determined by logic and convenience. And while Leonardo's awareness of this problem stems largely from theoretical considerations as applied to a special case, there can be little doubt that a practicing sculptor of Donatello's sensitivity would also have been aware of the idea of an appropriate viewing distance. It goes without saying that each work has its own appropriate distance of observation and that the principle is applicable to any work not set at eye-level. As applied to St. John, or any other similarly placed figure, one would approach the work until the desire for a closer view would be countered by the figure's disconcerting foreshortening. For St. John this might produce as much as a five- to ten-foot variation in the viewing distance, but the general appearance of the statue would still be that illustrated in the familiar view of it from below (fig. 4).[41]

---

[39] See note 11.

[40] E. Panofsky, *The Codex Huygens and Leonardo da Vinci's Art Theory. The Pierpont Morgan Library Codex M.A. 1139 (Studies of the Warburg Institute, XIII)*, London, 1940, 63f. Panofsky restates Leonardo's reasoning (in the latter's "Della prospettive," fol. 93r), saying that "as the shortening of the distance increases the visual angle a short distance seems to be advantageous for size distinctness. But it entails a deviation from the 'perfetto' in that it leads to a narrowing of the field of vision and to a distortion of the relative proportions of the object. . . . In other words, the wider the whole angle, the more considerable will be the apparent contraction of the top and bottom sections as compared to the central sections. Consequently, the shorter the distance and the wider therefore the whole visual angle 'the more seems to be perceived but the less is perceived in reality,' and the greater is the distortion of the objective proportions." Leonardo's ideas obviously parallel those of Plato on colossal statues (discussed above; cf. note 14). See also V. L. Bush, *Colossal Statues of the Cinquecento from Michelangelo to Giovanni da Bologna*, Ph.D. diss., Columbia U., 1967 (Garland Press ed., 1976), 45ff.

[41] See note 32. It should also be noted (as I implied in Munman, 1980, note 39) that the angle of observation for St. John does not change appreciably from a position at the bottom

This same principle of an "appropriate distance" is adaptable to the problem of subsidiary (usually lateral) views and, similarly, such "appropriate viewpoints" (there will always be two or more) depend on the particular circumstances of a given figure's location. As stated above, St. John's niche originally made a side view of the figure almost impossible and even three-quarter views were discouraged.[42] This limitation, as we shall see, is similarly felt in the prophets of the Campanile, who are set into even narrower Gothic niches high above the spectator's gaze and who appear slack and even awkward in angled views.[43] Thus, it is only in figures such as those at Or San Michele, or free-standing works such as the bronze David, where the question of subsidiary viewpoints is reasonably relevant, and, as one might expect, each of these cases varies in individual details. However, what can be said (in anticipation of the more thorough discussions to follow) is that the differences between the uninspired angled views of SS. Mark and Louis and the far more successful appearance of St. George from similar positions must be because the latter is the one figure of the three set in a shallow niche, where it can be clearly seen from such angles. Moreover, St. Louis, the figure that most completely fills its niche (and is therefore least visible from the side), is also the one most obviously awkward and unconvincing from a lateral viewpoint.[44] In brief, there is the strong implication in these works that Donatello pragmatically concentrated on those views of his work that he saw to be logically accessible to the observer, and when subsidiary views were predictable, the designs of the figures were indeed conceived to reflect that fact. By extension, when such angled viewpoints were not to be accessible, the figures were invariably designed to be seen first, and essentially, from their fronts.

* * * * * *

The St. Mark at Or San Michele has the distinction of being the earliest of Donatello's figures to have been described as revealing optical corrections (fig. 5) and, after St. John, the work most often cited in this regard.[45] The

---

of the Duomo porch to one at the stairs' top since one is proportionally higher as one moves closer. The angle of view does, of course, become more acute as one would approach the figure on the porch's uppermost level. (My thanks to Charles Rosenberg for recalling this point to my attention.)

[42] See Munman, 1980, figs. 5–8, for the visual evidence on the appearance of the original niches for the Cathedral Evangelists.

[43] See, e.g., Becherucci, 1969, figs. 154, 156, 158, 161, and 163.

[44] See Janson, figs. 69a, b. Interestingly, the least satisfying view (excluding, of course, one from the rear) is a three-quarter's one, from which the figure looks particularly top-heavy and unstable (see, for example, Janson, fig. 68a). It is possible that the work is slightly mispositioned in the replica of its original niche at S. Croce (and even in the original niche at Or San Michele when it was placed there temporarily in 1945 [as seen in fig. 11]). This, however, would have little bearing on its general appearance from the ground; the awkward effect of non-frontal views suggested here is based on a far more angled viewpoint than would occur from the statue's being turned a few degrees one way or another.

[45] The figure dates from 1411–13 (Janson, 1957, 16f.). Earlier scholars, taking Vasari's lead (discussed below) in seeing optical adjustments in the figure, include Crowe and Cavalcaselle,

reference is that of Vasari and, although often quoted, bears repeating because of its historical importance:

> This figure he executed with such judgment and love that when it stood on the ground its merit was not recognized by those unqualified to judge, and the consuls of the guild were not disposed to accept it. But Donatello asked them to let him set it up, since he wanted to demonstrate that after some retouching the figure would appear entirely different. This was done, Donatello screened the statue from view for fifteen days and then, without having touched it otherwise, he uncovered it, whereupon everybody was filled with admiration and praised the figure as an outstanding achievement.[46]

The implications of this account for Donatello's use of optical corrections are obvious, but the story also has been judged as more likely a reflection of sixteenth-century attitudes on the wise artist versus his often ignorant public. The foremost exponent of this interpretation is Janson, who offers three major reasons for this view: first, that the story, like a similar Vasarian anecdote on Michelangelo's David, merely illustrates a Cinquecento commonplace that "judgment in matters of art should be left to the experts"; second, that Vasari's account is more plausibly seen as a reference to the figure's rough finish meant to be read at a distance (and was so interpreted by Cinelli in 1677); and third, that "no one has yet pointed out the particular 'compensatory distortions' of the figure, though these should be evident in commercial photos taken from scaffolding."[47]

The first of these objections, that Vasari was merely echoing ideas of his own time, is historically defensible but, as Janson himself implies, impossible to prove. At the same time, it would be significant if the story was applied to a work by Donatello that is, in fact, distinctly different in appearance at eye-level and *in situ.* The second suggestion, that Vasari may have been referring to a rough finish, does not (as Janson admits) apply to St. Mark (which in any event, can be seen from fairly close-by in bright daylight if one so chooses). Finally, Janson's objection that commercial photographs do not show the so-called distortions has been refuted by Hartt, who illustrates a corrected view of the work and directs the reader to Seymour's side-by-side comparison of it with one of Nanni di Banco's more normally proportioned Quattro Santi Coronati.[48]

Semper and Kauffmann (the opinions of these men are discussed, and opposed, by Janson, 1957, 20). Among modern students the figure's optical corrections have been recognized by Seymour (1966, 59), Hartt (1973, 37) and Summers ("Michelangelo," 374). Earlier (but published after his monograph on Donatello) Hartt makes the interesting observation that when St. Mark is "seen from the street below, the major divisions of the body—foot to knee, knee to waist, waist to shoulder—appear to be aligned with the three horizontal divisions of the marble paneling inside the niche" ("Thoughts on the Statue and the Niche," *Art Studies for an Editor: 25 Essays in Memory of Milton S. Fox,* New York, 1975, 101). Although this is not, in fact, precisely the case, as the top of the uppermost division touches Mark's head, the actual situation perhaps makes for an even more interesting relationship.

[46] Vasari-Milanesi, 403. (trans. quoted from Janson, 1957, 18).

[47] Janson, 1957, 20f.

[48] Ibid., and Hartt, 1973, 14. There are, however, several further points that should be made here. For while Hartt (pointing to Seymour) objects to Janson's statement that optical

Hartt's reasoning here is, I think, essentially correct, and his photograph, like the present illustration, is taken from the same angle as that available to the observer standing at an appropriate distance from the image (about 20–25 feet; the figure stands about eight feet above street level [fig. 6]). Comparing such a view with an eye-level illustration of St. Mark (fig. 5), Hartt suggests that "it is obvious at a glance that Donatello has dropped the waist of this figure several inches, and accentuated the change by letting the belt slip even further down, in order to give him a longer torso and shorter legs, which would be corrected when seen from the ground."[49] But to be more precise, it is Mark's lower legs, from the knees down, that have been given the least proportional elongation (which, of course, is logical, since the members of the body seen at the least acute angles are least distorted by foreshortening). In addition, as seen *in situ* the figure's head and neck seem more organically related to the shoulders, and the head, turning more decisively to the left, looks out over the viewer with greater dignity and purpose. In sum, St. Mark reveals a number of compositional and proportional adjustments that give greater credence to Vasari's anecdote than it has generally received.[50]

* * * * * *

---

distortions should normally show up in commercial photographs, he does not note that most available "straight-on" photographs of St. Mark (and life-sized figures in general) are not in fact taken from the observer's eye-level, even when scaffolding has been used, but rather lower. This is true, for example, for all the commercial photographs illustrated here of Donatello's figures at Or San Michele and the Campanile, excepting only St. Mark and the Zuccone. This is done in order to give more equal distribution to any possible photographic distortions above and below the camera's horizon. But because of this, the photographs are centered on the figure, usually at the waist (as Castelfranco notes of Donatello's St. Louis; see note 58 below) or a touch higher, rather than on the face, where a normal eye-level view would be directed. Since in actual practice our eyes scan such an object and do not, like the camera, instantly register a single point of view, this technical adjustment is understandable. But the fact remains that the average observer, looking straight ahead, will be able to look directly at the face of a life-sized statue in front of him, while normally the photograph of the same work will show it from a somewhat lower position and, consequently, partially hide the true contrast between eye-level and low viewpoints. This may, of course, accidentally achieve a view of the work as it is seen *in situ*, but the correspondence will rarely be correct because it is rarely calculated in advance. In the two views of St. Mark offered here, the older, straight-on photograph has been taken from about the level of the figure's chest. However, since the statue is approximately 7 ft. 9 in. tall, this is about 5½ ft. from the base, a height close to that of the eye-level of the average observer. The comparison of the two illustrations is thus more instructive than that offered by Seymour (1966, figs. 16a, b). It should be noted that the upward divergence of the niche frame visible in fig. 5 is not a photographic distortion but actually exists. Doubtless this was not done for corrective purposes but rather (as one side [the right] is out of plumb) is simply the result of the wall's movement.

[49] Hartt, 1973, 14. In his second edition of *Italian Renaissance Art* (1979, 177) Hartt alludes to this optical effect not mentioned in his first edition (1969).

[50] It is worth noting that similar observations have been made about a figure by Jacopo della Quercia, a work of about 1412 and thus contemporary with Donatello's St. Mark. Seymour has pointed out that "the last survivor of the projected series of Apostles at (the Cathedral of) Lucca was quite evidently designed to be seen from below. The upper torso is elongated and the neck lengthened, the legs shortened, the lower edges and volumes of the volutes of the drapery somewhat exaggerated" (Charles Seymour, Jr., *Jacopo della Quercia,*

From the evidence of St. Mark's appearance, one would expect Donatello's other figures at Or San Michele to show similar optical corrections. And indeed the close-following St. George and later St. Louis of Toulouse do reveal the sculptor's continuing use of such modifications, although to different degrees.[51] As we have seen, St. Mark shows both passive (compositional) and active (proportional-anamorphic) adjustments, the former in the placement of the waist sash, the latter in the elongated torso and short lower legs. St. George is also adjusted to a view from below, but almost entirely in terms of passive elements (figs. 7, 8). Two physical factors bear on this. Since St. George is not draped but instead wears close-fitting armor, proportional changes would have been more difficult to effect without calling attention to them. Moreover, because the figure stands in Or San Michele's shallowest niche (due to the staircase on the interior), it can be seen from strongly angled views far more readily than its companions (fig. 9).[52] Under these circumstances Donatello may have found compensational distortions unwarranted or even disadvantageous. Yet, as a comparison between eye-level and low views of the figure demonstrates (figs. 7, 8) the position of the observer was certainly considered in the work's design. There are, of course, numerous compositional elements in St. George that, without any optical distortions, help create the work's famous sense of alertness, its "prontezza." "The ascending sweep of the enveloping mantle,"[53] for example, has been mentioned as a major reason for the figure's noted quality of "movement within the block."[54] But while this motif has been cited as making its impression when seen from below,[55] in truth it is almost as effective straight-on. There is, however, a small but important adjustment in St. George that does measurably increase his impression of "prontezza" when he is seen from street level. This is found in the design of the pedestal that, being slightly inclined up toward the back, raises the saint at the heels. Although difficult to discern from a head-on view, this slant of the base serves to prevent the figure's feet from disappearing toward the heels, as would normally happen when the work is seen *dal sotto in sù.* This also has the effect of tilting the figure somewhat toward the viewer, partially balancing the reverse effect caused by optical perspective, and allowing its asymmetrical footing to be seen

---

New Haven, Conn., 1973, 37). To some degree this kind of elongation is a stylistic trait of Quercia (see, for example, the relief of St. Lawrence on the Trenta Altar, S. Frediano, Lucca). But the strong deformation of the body, and in particular the larger head, suggest Seymour's accuracy in seeing optical corrections in the Apostle. In addition, the date of the figure is not so secure that an influence of Donatello's St. Mark can be ruled out.

[51] Neither figure is *in situ;* St. George is now in the Bargello, St. Louis in the Museum of S. Croce. Both, however, are in copies of their original niches and are set at their original heights above the observer: like St. Mark, about eight feet from street level at the figure's feet.

[52] Fortuitously, such a comparison can be seen in H. W. Janson, *History of Art,* New York, 1962, figs. 473, 474.

[53] Hartt, 1973, 49.

[54] Vasari-Milanesi, 403.

[55] Hartt, ibid.

clearly from below. It is this "passive" optical correction that gives St. George a significant part of his readiness of stance and incipient movement, even, as Donatello must have calculated, in a three-quarter view (figs. 9, 10). As previously suggested, it is not accidental that St. George, alone of Donatello's niche figures (at Or San Michele or the Campanile), does not appear awkward and hesitant in pose when see in three-quarter view or even profile. The work seems to be a classic example of the exception that proves the rule, especially since there is a logical reason for its exceptional status.[56]

* * * * * *

Although the gilt bronze statue of St. Louis of Toulouse (fig. 11) was created slightly later than the first of the Campanile Prophets (to be discussed shortly), its original location at Or San Michele makes its inclusion at this point convenient.[57] For if Donatello was concerned with the observer's point of view in both Saints Mark and George, it would follow that similar adjustments might be found in St. Louis. This probability has not gone unnoticed, but little has been said about the actual differences in the eye- and ground-level viewpoints (figs. 11, 12), possibly because the optical adjustments of St. Louis are more passive than active and more subtle than overt.[58] Nevertheless, there are a number of changes in the saint's appearance from below, perhaps the most obvious of which is the visual reduction in the size of his headdress. Hartt has correctly noted that "the huge enameled miter is tilted back so as not to overwhelm the serene face,"[59] but in itself this tilt is inadequate to reduce the miter's apparent size, something that occurs only when it is seen in a foreshortened view from ground level.[60] This lower view also softens the somewhat rectangular outline of the figure and allows it to taper more gracefully toward the miter's tip. The slight turn of both head and body to the left is also more discernible and the raised right hand is put into greater prominence, emphasizing the gentle but distinct gesture of blessing appropriate to the bishop saint.

---

[56] It may not be coincidental that two large-scale painted figures that are based on St. George, Castagno's Pippo Spano (from the Villa Carducci, Legnaia, now in the Uffizi), and Domenico Ghirlandaio's Camillus (Sala dei Gigli, Palazzo Vecchio, Florence), are seen from below and shown in *sotto in sù* perspective.

[57] The figure dates ca. 1422–25 (Janson, 1957, 45f.).

[58] Castelfranco, for example, accurately notes that "from the photographs that in general circulate, taken from the height of the figure's waist, the image appears awkward and reduced in size," but does not go on to discuss the work's appearance when correctly seen. (See also note 44 above.)

[59] Hartt, 1973, 62. The miter can be instructively compared to that of Nanni di Banco's nearby St. Eligius, which is both smaller and strongly vertical.

[60] One possible reason for the large size of the miter (cf. Janson, 1957, figs. 71, 73) in comparison to the headgear of the same saint and St. Prosdocimus at Padua (ibid., figs. 272, 277) is that unlike the later pieces it was separately cast. The resulting thickness of the walls (and the need to withstand the heat of fire-gilding) may have contributed to the object's formidable dimensions. In addition, the miter is elaborately decorated with mounted semiprecious stones and inlaid *fleur-de-lis* (the latter having a double significance in referring to the saint's royal lineage and to the Florentine lily), all of which are of a size that responds to a larger field.

These several optical corrections in St. Louis are noteworthy, but not unusual in Donatello's early work. There is, however, a broader transformation in the statue when it is seen *in situ,* a transformation that is explainable only as the result of the figure's relationship to its architectural setting. That there should be such an interdependence is to be expected, since St. Louis is unique in Donatello's oeuvre, occupying a niche that was almost certainly designed by the sculptor himself. So, for example, it is not surprising to see that from below the figure is visually raised precisely enough so that the head appears centrally positioned at the base of the shell apse. In this way the radiating grooves of the shell seem to emanate more obviously from the saint's head in the manner of a true halo. But beyond such details, an *in situ* view of the work shows Donatello's calculation of the physical space between the figure and niche. For at eye-level the bronze dominates its setting and reduces its architectural monumentality, while from below not only do the small ionic columns seem larger, and therefore more imposingly structured, but there is an improved proportional balance struck between the entire tabernacle and the massive figure it contains.

For Rosenauer the innovative design of St. Louis and his niche can be seen from any location. Comparing the work to medieval niched figures, Rosenauer notes that in Donatello's bronze,

> the figure no longer stands in a mechanical connection, but rather an optical one. Its centralized position (*ihr In-der-Mitte-Stehen*) is therefore no longer conceived as an embodiment of an architectonic axis, but as a striving to stress the center of a definite composition for the eyes of the spectator.[61]

This, however, describes what is essentially a two-dimensional relationship of figure and niche; the optical interactions noted here can be seen only in the three-dimensional relationship of both elements afforded by the observer's original *sotto in sù* viewpoint.

* * * * * *

Approximately contemporary with Donatello's St. George and St. Louis are the first three of his five commissions for the Cathedral Campanile, the so-called Beardless and Bearded Prophets and the Abraham and Isaac (figs. 13–18).[62] Considering that these over life-sized statues were designed to fill niches some sixty to seventy feet high, the use of optical compensation should, if anything, be more likely here than at Or San Michele. In fact, more than one scholarly analysis of these important works mentions their deeply cut draperies and exaggerated facial features as elements that respond to the great distance they are placed from the observer in the square below. Similarly, it has been noted that the Bearded and Beardless Prophets look downward and make strong psychological contact with the distant spectator. These are certainly among the most important of the elements that produce the dramatic effectiveness of these works. There are, however, other significant, if less apparent details and effects in them that were designed to make their impression from the low, angled view natural to their placement.

---

[61] "Die Figur steht mit der Nische nun nicht mehr in einem mechanischen, sondern in einem optischen Zusammenhang. Ihr In-der-Mitte-Stehen ist daher nicht mehr als Verkörperung einer architektonischen Achse aufzufassen, sondern als Bestreben, das Zentrum einer für das Betrachterauge bestimmten Komposition zu betonen." Rosenauer, *Studien zum frühen Donatello,* 35 (see note 3 above).

[62] All of the original Campanile figures are in the Museo dell'Opera del Duomo, but in recent years have been replaced by copies. The figures are dated by Janson as follows: Beardless Prophet, 1416–18; Bearded Prophet, 1418–20; Abraham and Isaac, 1421; the Zuccone, 1423–25; "Jeremiah," 1427–35 (Janson, 1957, 33ff.). These general dates have met with wide

It should be mentioned first that the great height of these figures produces less of a perspective diminution from foot to head than that seen in low placed statues simply because the observer's viewing distance is far from the object and the total viewing angle is very small. But while this perspective effect is less noticeable in these higher figures, the angle from which they, and all the upper figures of the Campanile, are normally seen (the perspective equivalent of their position above the spectator's horizon line) still optically compresses them (by about a tenth) and, of course, reveals a different view of their formal designs.[63]

In the Beardless Prophet (figs. 13, 14) Donatello allows a heavy fold of drapery to extend beyond the edge of the pedestal. Although from above the drapery is slack and its design prosaic, from below it becomes a sharply definable point of contact between the base and the figure, giving the latter a firmer sense of support. The cloth doubles back upon itself and leads dramatically up to the long, lower folds of the prophet's gown. From the same low vantage point the drapery edge leading from the figure's right foot up toward the right hand is more legible in its full, swirling pattern of light and dark, while the shadow formed by the fold beneath the right hand "points" to that pointing hand with greater clarity and emphasis. Both of these effects are much reduced when seen from eye-level (fig. 13) or above, and, in truth, the statue shows many such compositional touches that are appreciated fully only when seen *dal sotto in sù* (fig. 14). Thus, for example, from straight-on the Prophet's scroll seems merely pressed to his body, while from below (perhaps because the slight curve of the scroll becomes visible), it appears with its unwritten but implied message as if being presented to the viewer below. The scroll is thus iconographically more logical from an angled view and gives meaning to the pointing gesture of the hand that holds it.

---

agreement in the modern literature (e.g. Seymour, Hartt), but see also Becherucci, 1969, 268ff., and Pope-Hennessy, 1971, 255f., for opposing views.

[63] The Campanile figures, in fact, have been published in *di sotto in sù* views (taken, like the present illustrations, from scaffolding, but virtually reproducing the effect of ground-level photographs taken from the same angle). Such views, however, have often been mixed with eye-level photographs (cf. Castelfranco, 1963, figs. 27–31) and never used for analysis of the differences in the figures as seen from below and frontally.

Like the extended lower drapery of the Beardless Prophet, the left foot of its bearded companion also projects over the edge of his pedestal, similarly forming a visual link to the curving, upward-moving edge of his mantle (figs. 15, 16). The feet, like those of all his companions (by Donatello), are inordinately large with almost prehensile toes, seemingly to compensate for their being unavoidably obscured from a low vantage point. The hem of the robe, again like that of the Beardless Prophet's mantle, reveals a clear pattern and movement when seen from below, and the rolled folds of the undergown's bottom edge, also being somewhat higher at the front, become legible. Even the inventive motif of the right arm supported by the left, with the left hand grasping the mantle, makes a stronger impression from a low-angled view.

The two figures representing Abraham and Isaac (fig. 17) differ from the single Prophets of the Campanile in that they are depicted in a narrative action. Abraham clutches his son's hair and, resting his knife on the boy's shoulder, looks in the direction from which the voice of God's angel has just commanded the cessation of his sacrifice. It is around this action that Donatello constructs his composition and it is only from below that the success of his conception is completely realized (fig. 18). Particularly impressive are the broad double curves of Abraham's arms, the twist of his torso, and the sharp turn of his head and upward glance. The contrapposto of Isaac's body is also noteworthy, the more so when one realizes (from a sidelong view) that his left shoulder and arm, pressed tightly against Abraham's leg, are so sharply reduced in depth that they appear atrophied. Needless to add, this reduction is not visible from below or even from eye-level. In addition, the right foot of Isaac, like that of the Bearded Prophet projecting beyond the pedestal's edge, casts a visible shadow that, from below, more solidly defines the foot as a support for the figure. At eye-level, the movement of the boy's head is unclear; from below the head clearly turns down and back and thus emphasizes the vulnerability of the tender neck still awaiting the sacrificial knife. Even the placement of that knife is more suggestive from a low view since rather than simply resting on the curve of the youth's shoulder, it more dramatically appears to point to its intended mark. But perhaps the most striking of the optical adjustments to Isaac is the position of his left leg. Resting partly on the edge of a small rock and partly on Abraham's left foot, the left knee is raised above the level of the pedestal. This seemingly odd arrangement avoids the body's sharp twist downward that would have been necessitated by locating the knee at the same level as the right foot, but its main purpose is two-fold: it prevents the knee from disappearing in a low viewpoint while allowing it to appear to rest on the "ground" of the pedestal. At this angle the knee's actual support is neatly obscured by the front of the pedestal and the illusion that the figure kneels on one level is complete (fig. 18). The success of these devices, both here and in the earlier Prophets of the Campanile, can be seen even when these works are viewed from too sharp an angle, with the exaggerated foreshortening such an "inappropriate" distance produces, for the adjustments are still effective (figs. 19a, b, c).

* * * * * *

Donatello's last two contributions to the series of Prophets of the Campanile, the famous Zuccone and the so-called "Jeremiah," were placed originally in niches on the north side of the building and thus close to the south flank of the cathedral. Recognizing the difficulty of seeing these works, and probably wanting to honor the elderly sculptor, in 1464 the *operai* of the Duomo had all of the figures on the north face exchanged with the Pisano shop figures on the well-exposed (and presumably more prestigious) west side.[64] The designs of the Zuccone and "Jeremiah" may therefore have been determined partially by the circumstances of their original locations. However, the violent foreshortening of these niches from ground level (fig. 20) would have required the figures in them to have been radically distorted in order to achieve an appearance comparable to that of their nearby companions. And although the two figures do show optical corrections similar to those of the earlier Prophets, these adjustments are not strong enough to suggest that Donatello attempted to cope with the unavoidably acute angle of view. This is understandable since the eye-level appearance of such figures certainly would have seemed quite bizarre to Donatello's patrons and, no doubt, to the sculptor himself. For while it is now evident that Donatello was aware of various methods of compensating for angled points of view, there is no reason to believe that he was aware of the theoretical principles of extreme anamorphic distortion or was able to apply them in any systematic way. This is not the contradiction it may seem to be, since one will also search in vain for extreme examples of sculptural anamorphosis even in the seventeenth and eighteenth centuries when its theory and practice were commonly revealed in easel and fresco paintings.

The earlier of the figures is most likely the Zuccone, and of the two it seems better suited to both its original and final locations (figs. 21, 22).[65]

---

[64] G. Poggi, *Il Duomo di Firenze,* Italienische Forschungen herausgegeben vom Kunsthistorischen Institut in Florenz, II, Berlin, 1909, 59, n. 331.

[65] It has been tentatively suggested by G. Brunetti ("Riadattamenti e spostamenti di statue fiorentine del primo Quattrocento," in *Donatello e il suo tempo. Atti dell'VIII Convegno Internazionale di Studi sul Rinascimento,* Florence, 1968, 282) that the Zuccone was originally on the Cathedral façade. By identifying a flanking view of the prophet with a detail in Poccetti's drawing of the façade (see note 32), Brunetti places Donatello's statue on the beveled angle of the north-west corner, about even with the sculptural lunette of the nearby portal. But while there is a striking resemblance between a side view of the Zuccone and the figure in the Poccetti drawing, the documents speak against such a placement (It is perhaps significant that Becherucci, Brunetti's later co-author [1969], rejects the suggestion by omission.) But in any event, even in this location (half the height of the Campanile niches but still about 30 ft. above eye-level), the viewing angle for the figure would have been comparable to that of its traditionally accepted location.

The prophet's apparent attitude of speaking to the multitudes below him is the result of his downward gaze and his forceful but undeniably exaggerated facial features. These characteristics, and the voluminous, shadow-creating draperies, are all elements commonly recognized as having been designed to carry from afar and, therefore, from below. But, as one might expect, the Zuccone shows other details similarly oriented to the observer's point of view. Most obvious of these is the effective foreshortening of the head, the elongation of which is emphasized by the nearly bald pate. Less conspicuous is the left hand that is half-hidden at eye-level (fig. 21) but which becomes almost completely visible from below (fig. 22). But it is the apparent change in the extraordinary, billowing drapery that most benefits from the observer's angled point of view, for the large and seemingly uncontrolled folds of the lower mantle are transformed by foreshortening into a wide visual base for the entire figure. Furthermore, the lower edge of the mantle, divided into two folds close to the Zuccone's left leg, no longer meanders without specific direction, but instead forms a moving but clear line of continuity from the lower left to the upper right. This alignment, similar to that of the ascending hem visible in the *in situ* view of the Bearded Prophet (fig. 16), makes clear Donatello's cognizance of the primacy of the low viewpoint for the Zuccone as well.

The figure commonly designated as "Jeremiah,"[66] like Abraham, looks not to his Florentine audience but upward (fig. 23). His head is fairly level, but his eyes, directed upward to his left, clearly show the direction of his attention. Like the Zuccone, "Jeremiah" does not extend his feet beyond his pedestal, although there is no telling whether or not Donatello saw such an extension as incompatible with the figures' more vertical angle of view. In any case, "Jeremiah" displays qualities that we have come to expect in the high-placed Prophets of the Campanile. His head is boldly cut, with broad features and an intense expression, his feet are strikingly large, and his drapery, with its deeply excavated folds, covers his body heavily. But of Donatello's five autograph works for the belltower, this figure at first seems to show the least difference between a frontal and a normal, low point of view (figs. 23, 24). There is, of course, some change in the pattern of the mantle's fold system, specifically in the emphasized, almost pointed gestures of the main fold leading from the right side to the left arm. Additionally, the left hand, with its scroll, is also put into somewhat greater prominence from below, as if to emphasize the prophet's recording of the divinely inspired message that his upturned eyes tell us he hears. But these effects, while important, are admittedly less remarkable than similar touches seen in Donatello's other figures for the Campanile. It is noteworthy, however, that "Jeremiah" appears to be less optically distorted than the Zuccone when both are seen from a very acute angle that approaches (but, in fact, stops short of) their original angle of observation (figs. 25a, b). One might therefore legitimately conclude that, first appearances to the contrary, "Jeremiah" is the Campanile figure that best shows Donatello dealing with the problems of optical distortion due to unusual physical conditions.[67]

---

[66] Depending on the interpretation of the documents; the figure has been also identified as Habbakuk. See note 62.

* * * * * *

The last freestanding sculpture of Donatello explicitly to reveal optical corrections for the viewer's position is his bronze figure of David in the Bargello (figs. 26, 27).[68] The fully finished work is doubly interesting from this standpoint since, unlike the niche figures so far considered, it is freestanding in the full sense of the term and, indeed, is a textbook example of a statue designed with multiple viewpoints. The nearly universally recognized success of this aspect of the figure in itself indicates the degree to which Donatello was sensitive to the visual relationship between his work and its intended audience.[69] But the bronze also reminds us that the generally unsatisfying lateral views of all of Donatello's niche figures (save, in part, St. George), were the result of a conscious decision to emphasize those statues' frontality and not to mere neglect or inadequacy of conception.

---

[67] It is possible that the figures on the north side of the Campanile were intended to be viewed—at least in Donatello's opinion when he executed the Zuccone and "Jeremiah"—from the bridge that once connected the Duomo to the Campanile directly below. There are, however, several reasons why this is improbable. First, it seems that the bridge in question was used only on special occasions to facilitate ecclesiastical meetings in the tower. As pointed out by Trachtenberg, the second level reliefs representing the Seven Sacraments would have been easily visible to such a group and appropriate to their offices. But this visibility does not extend to the figures above, still more than 30 ft. over eye-level and, more to the point, only about 30 ft. away from the flank of the Duomo. While this is a considerable improvement in viewing angle from that available at ground level, at about forty-five degrees it is still relatively acute and some ten to fifteen degrees more than a comfortable view of the other niches of the Campanile. (By comparison, the figures at Or San Michele are normally viewed from an angle of about twenty to thirty degrees.) But even if one grants the advantage of the decreased angle of view of the Campanile's north face, it would be strange indeed if, in this civic decoration, Donatello should have oriented his figures to a very few individuals (who would have seen his work only sporadically) rather than to the Florentine populace in general. See M. Trachtenberg, *The Campanile of Florence Cathedral,* New York, 1971, 66ff.

[68] Usually dated ca. 1430–32, with a strong minority placing it some 8–10 years later (cf. Janson, 1957, 77ff. and Pope-Hennessy, 1971, 264). In either case, the figure would remain the last freestanding work of Donatello to show active optical corrections. More recently, however, the figure has been dated, for iconographic reasons, ca. 1425; see note 76.

[69] J. Paoletti is in sharp disagreement with this widely accepted opinion, going so far as to assert that David "makes sense only from the front." In addition, Paoletti takes the extreme position that the figure is a cast from a modello of 1463, made by Donatello for a cathedral buttress figure and was possibly made after Donatello's death in 1466. I find both of these suggestions thought-provoking but unconvincing, although I am in agreement with Paoletti (and others) that "the figure's downward glance indicates that it was designed to be seen from below. . . ." See J. Paoletti, "The Bargello David and Public Sculpture in Fifteenth-Century Florence," in *Collaboration in Italian Renaissance Art* (ed. W. S. Sheard and J. T. Paoletti), New Haven and London, 1978, 99–108. (See also note 78 below.)

While David's original location is not positively known, it is generally conceded that the bronze was meant to be seen on a pedestal, probably a column, as its earliest description tells us it was displayed in the center of the Medici palace courtyard.[70] But because the original pedestal is lost, the minimal height at which the figure was placed must be inferred from indirect evidence. It is known, first of all, that the three freestanding works by Donatello designed for exterior, non-architectural settings (the lost Dovizia, Judith and Holofernes and Gattamelata) were placed on high supports.[71] In addition, Botticelli, in his Death of Lucretia (Gardner Museum, Boston) represents a composite of the marble Martelli David and Donatello's famous bronze David atop a tall column.[72] While Botticelli's figure is a free interpretation of what he may have seen, the bronze David is known to have had such a support (if a smaller one), while there is no record of the marble figure having been so installed.

But if such evidence is only circumstantial, the statue itself is not silent on the subject of its original height. It goes without saying that in the fifteenth century no life-sized figure would have been set directly on the ground. Moreover, in David's case such a placement would have offered the spectator a view of the top of the figure's hat, the brim of which would have obscured the face. Conversely, when seen from below (fig. 27), David makes direct eye-contact with the observer before him, and the angle of the tilted head is a good indication of the angle from which he was designed to be seen in frontal view.[73] This low viewpoint also best reveals David's soft, almost languid expression, an effect that is largely due to the soft shadow cast over the face by the hat. So successful is this device that there can be little doubt that it was intended, and indeed may have been the reason behind Donatello's selection of such unprecedented headgear.[74] But the best substantiation of David's low angle of observation is found in a clearly calculated optical correction.

---

[70] The earliest reference to the David is from 1469 (Janson, 1957, 77). For the known history of the figure, see Janson (ibid. 78f.), who also gives cogent reasons for our present lack of evidence on the figure's original destination (ibid., 81). Pope-Hennessy (1971, 263f.) summarizes the early references to the column that may have been the original carved for the figure by (according to Vasari) Desiderio da Settignano, concluding that the figure "was set relatively high." The most recent consideration of David's original purpose and location is that of G. Passavant ("Beobachtungen am Lavabo von San Lorenzo in Florenz," *Pantheon,* 39 [1981]: 33–50). After demonstrating that the marble lavabo in the Old Sacristy in S. Lorenzo (traditionally attributed to Verrocchio) is a pastiche and not in its original location, Passavant suggests that the first incarnation of the piece was a fountain designed as a support for the David. Passavant's arguments are too lengthy and complex to discuss here, but his solution is ingenious. It is, however, also not entirely persuasive, not because of flaws in the author's reasoning, but because of the top-heavy, rather ungainly effect the solution offers. This, of course, is a modern opinion and contemporary reaction may have been very different. One must also concede that seeing the actual work in its presumed original form might make a major difference. In any case, because the original pedestal of the "fountain's" base is missing—and thus the work's original height not known—Passavant's theory, if correct, is still compatible with the analysis proposed here. Passavant also sees the David as having been conceived for a position elevated enough to allow the figure to look down at the observer since only from such a view can the sunken, shaded face make its full effect (39).

[71] For the lost Dovizia, see Kauffmann, 1935, 41ff.; W. Haftmann, *Das italienische Säulenmonument* (Beiträge zur Kulturgeschichte des Mittelalters und der Renaissance, LV), Leipzig and Berlin, 1939, 139ff.; G. Brunetti, "Una testa di Donatello," *L'arte,* 5 (1969): 81ff.; and, in particular, D. G. Wilkins, "Donatello's Lost Dovizia for the Mercato Vecchio: Wealth and Charity as Florentine Civic Virtues," *Art Bulletin,* 65, 3 (1983): 401ff. For the Judith, see note 78; for Gattamelata, see text below and note 81. The lost Joshua (see Janson, 1957, 148, 226) was also freestanding, but its extremely high position on a buttress of the cathedral puts it into a rather different category.

[72] The Martelli David (National Gallery, Washington) has been attributed variously to Donatello, Antonio Rossellino and/or his brother Bernardo. But as an unfinished work, it is unlikely to have had any official installation in Donatello's lifetime, regardless of its actual author. For opinions on the figure's attribution, see Janson, 1957, 21ff., and Seymour, 1966, 234, n. 21. Most convincing is the analysis and attribution to Antonio Rossellino by Pope-Hennessy ("The Martelli David," *Burlington Magazine,* 101 [1959]: 134–37; reprinted in *Essays on Italian Sculpture,* London and New York, 1968, 65–71).

It will be noted that in addition to its iconographic oddity and elaborate design, Goliath's helmet is strangely constructed (figs. 28–31).[75] First, the helmet does not rest correctly on Goliath's head, as shown in the fact that the center of the symmetrical foliate design on its front is located slightly downward (fig. 27). This is not the result of the head lying loosely on its side, since such a position would normally force the helmet relatively higher, not lower. Second, and more notable, the large visor, with its still-unidentified scene of putti pulling a chariot, is considerably off-center in the same direction. The vertical leading edge of the visor, which should be on axis with Goliath's nose, is approximately over his right eye. This effect might be explained by the assumption that Donatello wanted to emphasize the giant's decapitated state by allowing the head to roll back. However, a view of the helmet's top (fig. 28) shows that it is not the head but the visor that has been moved. The visor's leading edge, in fact, does not continue the decorative band in the helmet's center but instead turns sharply downward. Viewed from directly above (fig. 30), the visor's slightly rounded face comes to a definite point. A direct view of the right side of the visor, however, shows a clear bend in its center and a relatively straight leading edge (fig. 31). The perceptible bend in the surface is, of course, due to the pointed configuration of the visor's other side. Considering the degree of these structural anomalies, and the fact that Goliath's head is all of a piece with his helmet and visor, it must be concluded that such an obvious and non-functional asymmetry was not a miscalculation on Donatello's part, but rather is a reflection of his response to specific physical or aesthetic circumstances.

---

[73] See notes 69, 70. Hartt (1973, 210) suggests that the figure "might well have been placed on a newel post in Cosimo's (de'Medici) house in the Piazza del Duomo, where it would be seen first from below, and where its delicate finish could be examined from quite close as one ascended." But aside from there being no evidence at all for such a placement, it contradicts Hartt's own agreement (ibid., 209) with the commonly held assessment of the figure having been designed to be seen from all angles. (And this is not to speak of the complexity of designing a figure to be seen from above—that is, as one descended the staircase—as well.)

[74] Janson (1957, 84) follows Kauffmann in relating the hat to the type worn for hunting and travel in the later Middle Ages and early Renaissance in Italy (cf. the falconers in Ambrogio Lorenzetti's Effects of Good Government in the Countryside, Palazzo Publico, Siena). If this is so, it would give stronger credence to an aesthetic explanation for Donatello's choice of David's headgear, since there is no compelling iconographic reason behind it. See Kauffmann, 1935, 164 and n. 509.

[75] The iconographic "oddity" is, of course, the visor, since not only could its use have protected Goliath from the fatal blow to his forehead, it is an anachronism in the armor of a Philistine. On the possible reason for the inclusion of the visor, see note 76.

The explanation for the visor's appearance is, in truth, relatively simple. For having decided to decorate Goliath's helmet with an elaborate relief (based, as is well known, on a Roman sardonyx once in the Medici collection), Donatello wished to assure that detail's visibility.[76] Had the helmet been below eye-level, as simulated in straight-on photographs of the statue (fig. 26), no adjustment would have been necessary, but seen from a low angle (fig. 27) the relief would have been nearly hidden. Because Donatello moved the visor down toward the observer, bringing the relief into greater prominence when seen from below, he therefore must have intended the statue to have been raised at least to eye-level at its base and probably somewhat higher. The final evidence for this is seen in the sectional sphere that serves as a base on which Goliath's head and David's right foot rest (figs. 26, 29). This base rises dome-like within the surrounding wreath but does not extend to the latter's border. It is thus just high enough to allow Goliath's head and David's foot to be seen from below while it remains hidden from view. Together, the base and wreath show a subtle but unmistakable effort to adjust for the natural results of David's original height above the observer.[77]

It seems clear then that David's current presentation in the Bargello is incorrect and that the figure should be elevated at least six feet from the floor. This is based on the tangible evidence so far offered, but it is also justified by the figure's general appearance when it is seen from the lower angle that such a change would facilitate (figs. 26, 27). For not only are the beauty and harmony of the work maintained in such a view, but in some important ways they are dramatically increased. From below, David's legs appear slightly longer and heavier and thus less fragile, while his head seems commensurately smaller and thus more adult-like in proportion to his body. These changes, together with the shaded delicacy and sense of communication of the face, alter David's boyish bearing to a more mature air of grace. And while there are differences in the eye-level and low views of the figure that are difficult to characterize, the total effect of the work as seen *dal sotto in sù* can be defended as more visually satisfying besides being historically more accurate and logical.[78]

---

[76] Janson ("La signification politique du David en bronze de Donatello," *Revue de l'art,* 39 [1978]: 33–38) theorizes that Goliath's helmet once held a plume and "biscia" (serpent) in its now empty socket at its crest, objects that would have been symbolic of a heraldic device used by the Milanese Visconti (especially Filippo Maria), the enemies of Florence. For Janson, then, David likely would have been a commission of the Signoria during the military threat from Milan of 1423–28. The relief on Goliath's helmet thus could have had political rather than merely decorative meaning. Janson also concludes that the figure of David, as a secular ideal, would have had its logical place on a high column. (The visor relief is interpreted as a triumph of love by L. Schneider ["Donatello's Bronze David," *Art Bulletin,* 55, 2 (1973): 213–16]. Schneider's interpretation of the figure in general is answered by J. W. Dixon, Jr. ["The Drama of Donatello's David. Re-examination of an 'Enigma'," *Gazette des beaux-arts,* 93 (Jan., 1979): 6–12], who is in turn answered by Schneider ["More on Donatello's Bronze David," *Gazette des beaux-arts,* 94 (July–Aug., 1979): 48].)

[77] In Passavant's reconstruction of the S. Lorenzo lavabo as a fountain support for the David (see note 70 above), the figure's present wreath was not part of the original design (the wreath and part of Goliath's helmet do, in fact, appear to have been pieced on). But even, for argument's sake, if we assume this to be true, the marble wreath at the top of the lavabo's internal cup (on which the David is supposed to have stood) would have provided the same visual conditions as the bronze wreath does today.

* * * * * *

The years between the bronze David and Donatello's decade in Padua (1443–1453) were occupied by and large with works in relief (several of which will be considered in Part II). Of the freestanding figures from this period, none indicates significant adjustments to correct for the observer's position.[79] But knowing the variety of his Paduan work, which includes the Santo altar, a life-sized Crucifix and the over-life-sized equestrian monument to Gattamelata, one might expect to find continued application of the kind of visual correctives developed over his previous thirty-five years. That this is not the case is surprising, but reasons for it may be found in a combination of factors. For the altar itself, the absence of evident adjustments in its seven freestanding bronzes is partially explainable in that these figures were not only visible from nearly any angle—usually from a considerable distance—but are all smaller than life-size. These pieces were therefore less subject to optical distortions from a low point of view than Donatello's large marble and bronze figures from his earlier Florentine years.[80] On the other hand, though the monument to Gattamelata was also designed to be visible from a full 360 degrees and from widely variable distances, it was high and large enough for active optical corrections to have been applied. It is possible that the accepted appearance of such a monument, and the technical difficulty of casting it, militated against such adjustments, but there is also some indirect evidence that the sheer size of the work itself may have been considered a passive optical correction. For it is reasonable to assume that this statue was designed to meet the same perceptual requirements actually spelled out in the contract of a comparable commission. The nearly contemporary (but never completed) monument for Borso d'Este in Modena was apparently to have been a marble portrait and, most likely, an equestrian statue (as was the now destroyed monument for Borso's father, Niccolò III, in Ferrara, by the Florentines Niccolò Baroncelli and Domenico di Paris).[81] Documents reveal that Donatello not only convinced the *savi* of Modena to use fire-gilded bronze instead of marble (for technical reasons), but, as Rosenberg has noted, he may well also have been responsible for the contract stipulation "that the figure be made life-size or *larger* so that it would not appear to (be) smaller than life-size when seen from afar or above" (i.e. seen from below). As Rosenberg goes on to suggest, this "was probably Donatello's own suggestion as he was entrusted with the task of determining the proper amount of adjustment to make" and is, in any case, "concrete evidence of the artist's concern with perceptual problems."[82] Since the problem of the Este monument's high placement was identical for the statue of Gattamelata, it is very likely that Donatello came to the same solution whether or not the original Paduan contract demanded it.[83]

---

[78] While it is generally agreed that David was meant to be seen from all sides (but cf. note 69 above), its optical corrections can be seen only in its main, frontal view. This, of course, is necessitated by the nature of such adjustments since they correct for a particular viewing position.

Donatello's Judith and Holofernes (Palazzo Vecchio) was intended to be seen well above eye-level (and has been since the later Quattrocento), but shows no noticeable optical corrections. The head of Judith does face downward to the viewer, but this understandable motif is not accompanied by the type of adjustment found in the similarly raised David. Actually, the original height, location and support for the group remain conjectural (see Janson, 1957, 198ff.). But because the bronze base for the group was designed as a fountain (spouts in the corners of the cushion beneath Holofernes and in the centers of each of the three relief panels), presumably the observer was not expected to have approached the work too closely, thus precluding a strongly foreshortened view of it. This, plus the complexity of the figural arrangement, would account for the bronze's lack of optical corrections of an active, distortional sort.

[79] The remaining freestanding figures of the 1430s and early 40s are, in fact, very few: the polychromed wood Baptist for the Chapel of the Florentines in the Frari, Venice (see Janson, 1957, 187ff.; because of the signature and date revealed in recent restorations the figure is now known to have been finished in 1438), and the so-called "Atys-Amorino" in the Bargello (ca. 1440). For the Baptist, its original placement in the Frari is no longer known (it is now above the altar in the first chapel to the right of the Cappella Maggiore) and it is doubtful that Donatello, who carved the figure when still in Florence, knew of its destined position in any exact way. In any case, the figure's design does not seem to reveal an attempt to adjust for a possible high placement. The "Atys-Amorino" 's destination is also unknown, and, in addition, the figure is small (though life-sized) and unlikely to have been raised on a high pedestal (its present pedestal is modern).

---

[80] It is true that the Crucifix of 1444–47 is life-sized (5 ft. 11 in.) and is known to have been placed over the "great altar" of the choir (a location, as Janson [1957, 148] reminds us, that is usually interpreted as the old main altar) and thus perhaps as high as 20 ft. However, the figure shares one major characteristic with the small, later figures of Donatello's high altar that would account for its lack of optical corrections: it was relatively far from its intended audience. For here, as for the altar figures, the work was meant to be seen by the congregation at a considerable distance and thus at a relatively flat angle so that no significant foreshortening of the figure had to be considered in its design.

[81] Gattamelata is dated 1445–50 (Janson, 1957, 151ff.); the Este monument contract is dated 10 March 1451. For the latter see C. M. Rosenberg, "Some New Documents Concerning Donatello's Unexecuted Monument to Borso D'Este in Modena," *Mitteilungen des kunsthistorischen Institutes in Florenz,* 17 (1973): 149–52. (My thanks to Professor Rosenberg for bringing his article to my attention.)

[82] Ibid., 149f.

[83] Only three freestanding figures are generally accepted as having been produced by Donatello after his return to Florence from Padua. The Judith group has already been discussed (see note 78); the remaining two figures are the polychromed wood Magdalen from the Baptistry (now in the Museo dell'Opera del Duomo), and the bronze Baptist in the Cathedral of Siena (1454–55 and 1457 respectively; Janson, 1957, 190f., 196f.). The Magdalen's original location is not known (its earliest notice as being in the Baptistry [Albertini, 1510] comes over fifty years after its creation). Similarly, the destined position for the Baptist, like its wooden counterpart in Venice, is not known (and, indeed, the figure was delivered unfinished and remained so for an undetermined time). According to Janson the figure's present location, the Cappella S. Giovanni, was not built until 1480 (Janson, 1957, 196f.).

PART II: THE RELIEFS

While Donatello's use of optical corrections in freestanding sculpture seems largely confined to the first half of his career (beginning with the St. John of 1408–15 and including the bronze David of about 1430–35), his interest in such techniques as applied to the relief appears only after the mid-1420s. This shift in emphasis may appear to have been deliberate, but it is well to remember that such a division also generally corresponds to the requirements of Donatello's earlier and later commissions, that is, the first half of Donatello's nearly sixty years of activity was dominated by large-scale public works consisting, for the most part, of elevated, freestanding figures. Although the sculptor continued to receive this type of commission until near the end of his life, his middle and late years see his constant occupation with the relief. On the other hand, although Donatello had an early (and life-long) concern for naturalistic and dramatic effects, his command of a major means of achieving such results, linear perspective, was a relatively late development; the Feast of Herod, after all, was produced close to the artist's fortieth year. Thus, not only is it understandable that Donatello shows his most audacious spatial experiments in the reliefs of his mid- and late career, it is also to be expected that his most mature experiments in optical corrections should be seen in the same periods and in the same medium. Naturally, the purposes of optical corrections, whether passive or active, are identical for sculpture in the round and relief, and the techniques for these corrections, as anamorphosis, are often the same as well. There are, however, optical devices that may be used in relief but that are simply not applicable to freestanding figures, and the most obvious of these is linear perspective.

Although perspective is a system designed to simulate depth on a two-dimensional plane, it can be applied to the three-dimensional form of the relief as well. When it is so used, however, it becomes less controllable in direct proportion to the depth of the relief and finally leaves the realm of perspective entirely when the work passes from high relief into freestanding independence. For this reason sculptural perspective is a variable technique that, to be used effectively, requires artistic sensitivity and imagination. Because these are qualities Donatello possessed in abundance, his ultimate mastery of perspective, and his early use of optical corrections, would make his eventual combination of these illusionistic elements almost a foregone conclusion. Still, it may be somewhat surprising to see that Donatello's first fully developed perspective construction, the Feast of

Herod in Siena, is also such an optically corrected work.[84] The Feast, however, presents several complex problems and will therefore be better treated and understood if we first consider a slightly later work that presents a more definitive statement in terms of its optical and perspectival elements: the bronze, *relievo schiacciato* tomb slab for Bishop Giovanni Pecci, on the floor of the S. Ansano chapel in the Duomo of Siena (fig. 32).[85] The illusionistic character of the Pecci slab (fig. 33) has not gone unnoted in the literature,[86] but it is only recently that the relief has been published in a view designed to simulate its perspective effect as seen by the observer at its foot.[87] This illustration is offered by Hartt, who notes Janson's remark that the perspective of the tomb "is keyed to the observer standing at or near the foot end of the slab."[88] Hartt, however, adds that "unless the observer is really looking forward and down, with his gaze centered at the feet, the perspective will not come out right,"[89] and this is something of an exaggeration. Certainly one must look down at the relief from its foot (fig. 33), but one need not look directly at the figure's feet to effect the overall illusion. (Allowing one's eyes to scan the figure does not in fact change the latter's perspective, only one's perception of it, and then only in a small degree.) In any event, when correctly seen, Pecci's curved, trough-like, handled bier (apparently the earliest example of this particular "concetto") seems truly to stand on its own legs, while its simulated depth helps the figure's foreshortened feet to exist in a definable space. Before these feet were worn down their effect of extension must have been even more striking. It should also be noticed that this spatial projection is effective in spite of the tomb's inscription working almost at cross-purposes with it. The inscription is the only strongly two-dimensional element in the total design (notwithstanding the small foreshortened putti who seem to grasp its ends), and as such it tends, psychologically, to flatten the rest of the relief. Apparently sensing this problem, Donatello attempted to mitigate its effect by allowing the inscription to overlap an extension of the floor-level "base-frame" beneath the bier while showing the same extension overlapped by the apparently higher carrying poles. Still, it is only when one momentarily ignores the inscription that the full, projective solidity of the bier can be appreciated. (This, of course, is best done when standing before the slab itself, but the effect can be reproduced by covering the inscription in fig. 33). The use of this kind of inscription is in itself interesting since traditional practice called for one that ran around the slab on all four borders. But as the "sides" of the relief are themselves made up of representational elements, an arbitrarily flat border would have nullified much of their illusionistic effect. Moreover, had the epitaph been placed on all four sides, the viewer would have been led away from the viewpoint of the perspective construction. But with the inscription at the foot of the memorial, the observer is effectively directed to the viewing position from which the rest of the slab makes visual sense. Thus, by using the inscription to draw the observer to the correct viewing point, Donatello was able to design his work with a logical, consistent and striking illusionism that produces an unprecedented sense of unity in the entire monument.

---

[84] While the perspective construction of the relief at Or San Michele of St. George and the Dragon is Donatello's earliest known example of the technique, it is subsidiary to the main scene and, of course, still obviously inaccurate.

[85] Ca. 1428–30 (Janson, 1957, 75f.).

[86] E.g. Panofsky (*Tomb Sculpture*, 72) who mentions the illusionistic character of the tombs of Pecci, Giovanni Crivelli and Pope Martin V (the latter, by a follower of Donatello, illustrated in a foreshortened view, fig. 311). Both the Crivelli and Martin V reliefs are considered below.

[87] Hartt, 1973, 163.

[88] Janson, 1957, 76.

[89] Hartt, 1973, 163.

There is, finally, one previously unnoted detail of the Pecci slab that corroborates Donatello's use of optical corrections: the elongation of the effigy. At about 8½ heads tall, Pecci is about a head taller than Donatello's standard and, in this regard, seems to be proportionally unique in his oeuvre. These proportions are a response to the observer's unavoidably close position at the foot of the tomb (in order to see the slab conveniently as well as to read the inscription) and to the fixed distance of his eye from the ground. (The equivalent viewing position for an upright, niche statue would be two to three feet below the base of the niche—the approximate distance one stands from the foot of the tomb—and about five to six feet from the wall, that is, the equivalent of an average eye-level.) This relative position produces an acute angle of view that increases from approximately twenty-five to about sixty degrees from the foot of the statue to its head and is a viewing angle sharper than that required by any other of the sculptor's figures. Thus, while Pecci's elongation could be a reflection of his true appearance, it seems more plausible that it stems from Donatello's expectation that natural foreshortening would correct the effigy's appearance when it was seen from the position demanded by the slab's inscription and perspective.

These observations indicate that the Pecci tomb slab, unlike Donatello's freestanding figures and even unlike his perspective-determined relief scenes, has a narrowly fixed viewing area at its foot and a predictable angle of view from which, and only from which, the design is optically coherent. Because of this, the tomb has an importance in Donatello's work beyond merely illustrating the artist's ingenuity with perspective or even his use of optical corrections. For the monument is a demonstrable instance of the sculptor's unambiguous application of perspective and proportional corrections to allow for optical distortions caused by the position of the observer. The Pecci slab thus confirms the supposition that Donatello was capable of making similar adjustments in other cases in which the optical effects may be as important, but for which the visual evidence may seem less precise.

At this point it is worth noting three interesting variations on the particular theme of the illusionistic tomb slab, one by Donatello and two attributed to his followers. The relief by Donatello is the signed tomb slab of Giovanni Crivelli, now in S. Maria in Aracoeli in Rome, and is dated just after the Pecci monument, 1432–33 (fig. 34).[90] Unlike the Pecci memorial, that for Crivelli at first seems not to have been designed with an illusionistic intent. The figure lies on a curved support similar to that of Pecci, but one that more closely resembles a horizontal niche than a proper bier. Crivelli's effigy also shows little foreshortening, and the feet, unlike Pecci's, are seen from straight on and not from below. These details, plus the traditional placement of the inscription on all four outside borders of the frame, suggest that Donatello was less concerned here with creating a three-dimensional illusion than he had been in Siena. In all likelihood the slab (no longer *in situ,* but now set vertically against a wall), like most such reliefs, could have been seen from any of its sides. Nonetheless, Donatello added three significant touches of illusionism to the tomb that suggest it was meant to be seen, at least primarily, from a particular direction. First, when the figure is viewed from "below" (that is, the foot), the apparent depth of the niche-bier is increased because the entablature behind the shoulders actually, not just apparently, curves downward. (This effect can also be seen in the Pecci slab, although there the decorative molding is less architectural.) Second, despite the frontal view of the Crivelli effigy, the hem of the gown is seen slightly *dal sotto in sù.* And third, the inner sides of the bases of the pilasters flanking the figure are clearly angled downward, converging below the slab's lower border. Thus, although the present position of the tomb prevents one from observing and photographing it from its foot, there is good evidence that such a viewing position was the main one intended by the artist.

Certainly this is true of the most important of the Donatello-inspired tomb slabs, the bronze monument of Pope Martin V in S. Giovanni in Laterano, an anonymous work given by Vasari to Donatello's "brother Simone."[91] As Janson has noted, this relief imitates the illusionistic effects of the Pecci tomb,[92] although one must agree with his conclusion that the attempt is ultimately unsuccessful since, for several reasons, the figure does not appear to rest convincingly in its trough-like bier. But if the total illusion is not successful, the perspective convergence of the bier's vertical elements makes it obvious that the work was meant to be seen from a fixed position at its foot in imitation of the Pecci design.

---

[90] Janson, 1957, 101f.

[91] Vasari-Milanesi, 419 (see Janson, 1957, 232ff. for a full discussion of this work). This "Simone" is sometimes equated with Simone Ghini (ibid., 233f. and Panofsky: note 19 above). The older literature (e.g. Semerau, Schottmuller, Schubring, Kauffmann) has attributed the work to Donatello or has given him partial credit for its design. More modern scholarship is similarly divided, with attributions to Donatello, an unknown follower, Michelozzo, Ghini, or some combination of these (although usually including Donatello as designer, at least of the effigy's face). See Poeschke (*Donatello-Figur und Quadro,* 61ff. and accompanying notes) for the most recent discussion of this work and a summary of its attributions.

[92] Janson, 1957, 234.

The third of our variations on the Pecci slab is representative of a significant number of Sienese marble or stone tomb slabs from the second half of the Quattrocento. And though it is now in the Museo Bardini in Florence, the work was undoubtedly produced by a Sienese sculptor reacting to Donatello's innovative design in bronze.[93] This modest memorial to an unknown friar (figs. 35, 36) is not the most accomplished of the several related reliefs, but it is worth introducing here because, in addition to being unpublished, it is—for a floor tomb—in relatively good condition, the treatment of the hands and face is not without skill, and the relief more closely approximates Donatello's illusionistic optical adjustments than any of the pieces still in Siena. For like the Pecci tomb, this work shows a bier that stands on legs (now heavily worn) that are in perspective and visible only at the foot of the monument. Also present are the carrying poles, the downwardly curved molding beneath the shell behind the figure's head, and the curved end of the bier to indicate depth (also much worn and difficult to read in its original, intended perspective). Finally, in imitation of the effigy of Pecci, the unknown friar is shown from below, with a *sotto in sù* view of his habit and, rather ingenuously, the bottoms of his somewhat awkwardly turned feet.[94]

* * * * * *

As clearly suggested by the number of Sienese tomb slabs based on the Pecci relief, Donatello's experiments with *sotto in sù* optical corrections, and the reflection of these ideas in works by his followers, are better represented in Siena than in either Florence or Padua, the sculptor's main loci of activity. We shall return to these later Sienese works, but Donatello's most important commission for that city, the Feast of Herod, should be considered first (fig. 37).

Few works by Donatello, or indeed few from the Renaissance, have attracted as much study as the Feast of Herod. Needless to say, there are many elements of the renowned work that have received scholarly attention, but none more than its perspective construction. But since the perspective of the Feast is intimately related to Donatello's possible use of optical adjustments in the panel, it would be helpful first to clarify some points on this aspect of the work.

---

[93] My thanks to Dottoressa Fiorenza Scalia of the Soprintendenza alle Belle Arte for her kind permission to photograph this work. See note 134 for other Sienese examples.

[94] James Beck has recently discovered a Florentine tomb slab in Sta. Croce that reveals optical corrections comparable to these monuments by Donatello and his Sienese followers. This work, documented to 1474 and to the hand of Antonio Rosselino, and dedicated to Leonardo and Elizabetta Tedaldi, differs from its precedents not only because it is uniquely a double tomb, but because it shows the two effigies lying side by side in a bed. The illusionism is found in the head- and foot-board, which are shown strongly foreshortened so that, for the observer several feet from the monument's foot, they seem to stand upright. But while this particular optical illusion does not duplicate any of Donatello's designs or their variants, as Beck notes, it "may be thought of as an extension of Donatello's consciousness of the problem inherent in low relief tomb slabs which he dealt with several times, most majestically in the Pecci Tomb . . . fifty years earlier." J. Beck, "An Effigy Tomb Slab by Antonio Rossellino," *Gazette des beaux-arts,* 95 (1980): 215.

There is neither space nor need here to summarize all the diverse analyses of the perspective organization of the Feast of Herod except to say that, broadly speaking, their authors fall into two distinct groups: those who hold that the construction is accurate (and thus reflective of Brunelleschi's new invention), and those who contend that the work shows two or more vanishing points (and is, therefore, incorrect in terms of linear perspective as codified by Alberti some ten years after the relief was created). Most scholars who subscribe to the second view (the clear majority), in turn fall into three main groups: those who attribute the "incorrect" perspective to Donatello's incomplete understanding of the new system; those who give psychological and dramatic reasons for what is seen as the purposefully incorrect application of the rules; and those who hold that the inaccuracies are so slight that they must be the result of small mistakes in the chasing of the relief.[95] Finally, there is the minority opinion, including this writer's, that the "errors" of the Feast's perspective are due to the medium of relief itself and the inherent contradiction of applying perspective to three-dimensional images.[96]

It is generally acknowledged that a careful measurement of the orthogonals in Donatello's panel reveals several vanishing points in the floor, none of which coincide with the fewer, but still multiple vanishing points of the background architecture. But since the perspective of that background is generally accurate and unprecedented in its complexity, it strongly suggests that Donatello possessed a theoretical knowledge of the perspective system. This apparent paradox can be explained by several factors, the foremost of which is the problem of the artist's applying a two-dimensional optical system (perspective) to a three-dimensional reality (a relief). This problem is then compounded by a reversing of the process in attempting to check the perspective's precision with the use of a flat photograph. As Hartt has noted, such measurements are inherently faulty because "too many of the lines are bound to move in actual as well as simulated depth, and cannot therefore be reduced accurately to a single plane."[97] For similar reasons the apparent errors in Donatello's perspective construction are directly related to the different degrees of relief in the upper and lower zones of his panel. It is not accidental that the relatively shallow architecture of the background allows a close convergence of its main orthogonals on a single vanishing point, while the higher relief of the floor has anywhere from two to nine distinct points (depending on how many intersections of converging lines one chooses to count).[98] Indeed, one can generalize beyond the specifics of this relief and say that unless the sculptor (with one eye closed and the other fixed at the panel's distance point) realigns his orthogonals and transversals during the final modeling of the relief (difficult in clay and impossible in marble), he can never produce a "correct" perspective construction. Furthermore, the problem in the Feast is increased by Donatello's usual technique of inscribing the architectural perspective "free-hand" in the wax or clay, thus preventing an accurate measurement of his lines.[99] While these considerations naturally do not show Donatello's perspective to be accurate, in point of fact it is largely because the Feast of Herod occupies such an important place in the early development of perspective that its "errors" in this regard have received such attention. Actually, a close scrutiny of any number of later examples by known masters of perspective would show the same apparent use of vanishing areas (or, at very least, more than one vanishing point) for the same reasons.[100] Thus, while a relief with a combination of real and simulated spatial recession can be among the most convincing of illusions, the fact remains that such works still cannot be expected to obey the rigid laws of two-dimensional, Albertian perspective.

---

[95] The last opinion is unique to Janson, (1957, 69); for a summary of earlier opinions, see ibid. Cf. also Seymour, 1966, 80; White, 1967, 149; Carli, 1967, 14; and Paoletti, 1967, 84ff. (See also note 106 below).

[96] E.g. Hartt, 1973, 146, and Castelfranco, 1963, 36f. (The latter is ambivalent, however, about whether the "discordance" of the multiple vanishing points was a purposeful device by Donatello to accent the height of the room, or if it was a "tolerated" error of aids in the chasing of the relief). Speaking specifically of the St. George relief at Or San Michele, Pope-Hennessy (1971, 14f.) suggests that Donatello developed the nearly two-dimensional *relievo schiacciato* technique because of the inherent incompatibility of a projected space on the physically recessed plane of a relief.

[97] Hartt, ibid. However, Hartt here also implies a precise perspective construction in saying that a diagonal drawn through the squares of the floor will pass through the adjacent corners (although a very carefully drawn line does not, in fact, do so), and, further, that "every

---

beam, arch, jamb, step, molding, capital, base, building block and floor tile conforms to Donatello's all-embracing system; all are correctly and consistently projected." Hartt is, I think, right in emphasizing that "to all intents and purposes, within the limits of his soft material and changing levels, and to the entire satisfaction of the eye, Donatello's perspective lines are valid," but this is very different from the absolute accuracy he suggests in the former remarks.

[98] If one counts the projected crossing of the orthogonals of the tablecloth (visible in Carli, 1967, pl. IV), there are additional vanishing points resulting from the same problem.

[99] Hartt, 1973, 146. Carli, however, maintains that not only does the floor of the Feast appear squared off after the relief was cast, but that even the vaults of the represented room reveal traces of incised and chiseled work (1967, 138 n. 39). But both techniques, in fact, may well have been used. Carli's detailed illustrations (pls. VI, VIII) reveal that the lines of the closest lower wall clearly were drawn in the wax, whereas the rather sharper lines of the background rooms, the tablecloth, and the floor seem to have been added by chasing. Neither technique, however, is necessarily more accurate in terms of creating a precise perspective construction. That Donatello was concerned with the overall effect of his perspective, rather than maintaining a precise construction, is further indicated in that there is even an instance of a misaligned vertical in the relief: Herod's bench leans back slightly off a vertical line established on the horizontal lines of the floor. Few, however, would hold that this indicates that Donatello was not aware of the relationship of the vertical bench to the horizontal floor.

[100] Antonio Pollaiuolo's *Birth of the Baptist* and Verrocchio's *Decolation of St. John,* from the Silver Altar of the Florentine Baptistry (Museo dell'Opera del Duomo) are particularly good examples of this (see C. Seymour, *The Sculpture of Verrocchio,* Greenwich [Conn.], 1971, fig. 93, for the background architecture of the Verrochio panel without the figures), but numerous instances might be adduced.

Given this situation, the basic problem of Donatello's perspective in the Feast is no longer one of its being precisely correct in Albertian terms, but whether or not Donatello understood and used the essential principles of linear perspective for his original, drawn design, and if so, for what purposes? The answer to the first of these questions has been implied already, since there can be little doubt that the background architecture of the panel reveals Donatello's basic understanding of the system's principles. The purposes to which this system was put, however, are less evident. Certainly the numerous psychological, emotional and dramatic effects that students have attributed to the relief's perspective and figural composition have thrown much light on the sculptor's narrative ends. But many of these analyses are predicated on the assumption that the panel's incorrect perspective was deliberate. Because (the reasoning seems to go) Donatello should have had (and apparently did have) an understanding of the correct laws of linear perspective, and because the Feast shows an apparent divergence from these laws, that divergence must be based on narrative or dramatic goals.[101] But because it is clear that the actual depth of the relief prevents a consistent adherence to the rules of linear perspective, there is no reason to reject the idea that Donatello had a deep interest in that system's most fundamental characteristic, that of spatial illusion.

In this regard, what comes to mind immediately is the use of perspective to create what would later be known as the Albertian window, that cross-section of the visual pyramid through which one sees either an apparent continuation of one's own world, or, more commonly, an ideal continuation of the self-contained world of the image itself.[102] In these same years Masaccio may have attempted the first of these effects in his fresco of the Trinity. And although not entirely convincing as an illusion (for both technical and iconographic reasons), the architectural perspective of the Trinity does seem to coincide with the perspective view of the observer who is situated at the fresco's distance point in the nave of S. Maria Novella.[103] Of course, both the absence of natural colors and the small scale of the Feast of Herod prevent it from suggesting such an illusionistic continuation of the observer's space. But even in terms of the Albertian window, the space of the relief is self-contained rather than continuous with that of the observer simply because its horizon (and indeed its upper frame) is far below that observer's normal eye-level. Moreover, it is most probable that even had Donatello wished to suggest a continuation of the viewer's space by moving the horizon of the relief sufficiently upwards, the circumstances of the commission would have proscribed such an attempt. For it is almost unimaginable that Donatello would have been allowed to have his relief stand out so conspicuously from its five identically placed companions (by four different sculptors) and, equally important, it is highly doubtful that in his first major essay in the use of perspective, he would have considered placing a horizon line outside the scene. This should not be surprising when one recalls that even years later, when Donatello did construct perspective spaces in which the horizon apparently corresponds to that of the viewer, the distance points were usually much closer to the reliefs than the viewer would, or often could, stand.[104] Furthermore, as indicated by the relative rarity of true illusionistic spaces in Renaissance art (even in painting), it is the general rule that an ideal space is constructed regardless of the observer's position. Nevertheless, even if Donatello could not avoid an ideal point of view in the Feast of Herod, this did not preclude his use of optical corrections calculated for the actual position of the observer.

---

[101] E.g. Seymour, 1966, 80f., Paoletti, 1967, 85, and Becherucci, "Donatello," in *Encyclopedia of World Art*, New York, 1961, 4, col. 432. These theories all contain an element that is inherently implausible: that Donatello, having just mastered Brunelleschi's new space-creating device, almost immediately set out deliberately—and unnecessarily—to disregard its essential principles for dramatic or decorative reasons. As Paoletti points out (ibid., 86), Donatello "was not to elaborate upon this manipulation of single-point perspective until another non-Florentine commission, that of *The Irascible Son* in Padua of c. 1450." In that work, however, the "manipulation" is more than obvious, and it may be legitimately doubted that such conscious deviation could have occurred in the mid-1420s.

[102] ". . . on the surface on which I am going to paint, I draw a rectangle of whatever size I want, which I regard as an open window through which the subject to be painted is seen . . . ," L. B. Alberti, *On Painting*, I, 19, quoted from *On Painting and On Sculpture*, ed. and trans. C. Grayson, London, 1972, 55. See also White, 1967, 121ff., 189ff., and Rosenauer, *Studien zum Frühen Donatello*, 77, 79f. (see note 3 above).

[103] It is difficult to pinpoint the earliest painting to attempt this complete illusion, though the logical candidate is the famous, now missing, panel by Brunelleschi depicting the Florentine Baptistry. As is well known, this work was to be viewed from the back through a small hole,

While the low position of the Feast of Herod is a known fact, few scholars have suggested that the design of the relief reflects this location, and none has tried to illustrate or explain the effect that such a viewing point offers.[105] Indeed, Paoletti specifically states that the relief was not so designed because "the meeting points of the various sets of orthogonals do not co-ordinate when the relief is viewed from above."[106] This, however,

---

the scene being reflected in a mirror. There are, of course, several fourteenth-century pictures that attempt the illusion of continuing the image behind a frame that is part of the viewer's world (e.g. Pietro Lorenzetti's Birth of the Virgin in Siena). But the intuitive perspective of these works prevents their complete illusionistic success. Following Masaccio's Trinity, the earliest painting to use Albertian perspective in this way may be Fra Filippo Lippi's S. Lorenzo Annunciation (ca. 1440; cf. Hartt, 1979, pl. 27). This shows the necessary consistency of a linear perspective that apparently continues the optical foreshortening of the real frame, but the work's centralized horizon is, and has always been, above eye-level. The illusion is thus compromised.

[104] Many examples by Donatello exist but the most obvious might be the Old Sacristy tondi, some of whose distance points, as White has pointed out (1967, 192f.), are about six feet from the relief and therefore some forty feet above the observer. (For a discussion of such ideal viewing distances, see White, 1967, 192–201.)

[105] E.g. Hartt, 1973, 225; Seymour, 1966, 80; and White, 1967, 149.

[106] Paoletti, 1967, 86. Paoletti (n. 63) continues with the observation that "such precise corrections imply on-the-spot measurements. That Donatello never went to Siena, and furthermore, that he had uncertain information about the very measurements of his relief is shown by the small size of the *Herod* relief which had to have bronze strips added to its edges in order that it fit tightly into the basin." This, however, does not prove that the sculptor did not adjust his work empirically for a view from above. For this he would have

implies that these lines do, in fact, converge in an eye-level view, although (as Paoletti recognizes) they do not. Thus, their non-convergence from above means little in terms of Donatello's considerations of a high angle of observation. As it happens, in a photograph of the panel taken from the correct, high point of view (fig. 38), the orthogonals do come somewhat closer to vanishing at a single point than they do from eye-level. But it should be reiterated that such a measurement, for the reasons stated above, cannot prove the accuracy of the relief's perspective from any particular position, high or low.

But whether or not its perspective is perfectly accurate, the Feast's high viewing position, particularly when the panel is seen *in situ,* is clearly advantageous, not least because the one most criticized "error" of the design now appears largely corrected. Whereas the floor seems to slope upward in a standard photograph (and, from an eye-level view, in reality as well), when seen from above it recedes in a relatively natural fashion toward the rear wall.[107] The table too appears more horizontal when correctly observed and, in fact, the whole scene takes on a greater feeling of depth. Naturally, this optical sensation is stronger when the original bronze is seen in place, but even in a photograph taken from above, the work suggests a deeper space in which the figures move more comfortably.[108] But if the entire panel benefits from being viewed from its intended high angle of observation, two details are particularly noteworthy. The first is the apparent increase in the separation between the kneeling soldier and the figures of Herod and the remonstrating guest next to him. But still more remarkable is the change in the direction of Herod's gaze (figs. 39, 40). Seen from the front, Herod appears to look straight ahead, *over* the severed head of the Baptist. From above, however (even slightly above, as seen in the detail reproduced here), he clearly stares *down* toward the gory sight, thus giving deeper meaning to his horrified reaction.

---

needed to have known only the approximate height of the finished relief when in place, a simple enough measurement to obtain.

[107] Thus, White's reference ("Developments in Renaissance Perspective—II," *Journal of the Warburg and Courtauld Institute,* 14 [1951]: 47, and 1957, 151) to this as a purposeful retention of an archaism is correctly criticized by Paoletti (1967, 84, n. 61), but for the wrong reasons (see text above and note 106).

[108] Before the high view of Donatello's relief can be fully appreciated in reproduction, the reader may first have to contend with a slight psychological barrier, that is, the downward-converging sides of the relief's frame. The perspective effect (slightly emphasized by the monocular camera) is, of course, exactly like that of a niche above eye-level, in reverse, and like that effect, it is seen, and ignored, by the viewer standing before the actual panel. That the image may be more disturbing in reproduction than in reality is not due to an exaggerated perspective, but rather to the unfamiliar angle of observation for a relief. This is easily demonstrated by comparing the present photograph of the Feast with the *in situ* illustration of the Pecci slab in fig. 33; although the sides of the latter converge far more sharply than those of the Feast panel, the image looks essentially correct, even aside from Donatello's perspective devices, because the direction of observation is normal for a floor tomb and is thus expected. In short, even the correctly taken photograph can only recall, but not substitute for, the effect of the work of art seen *in situ.*

Considering the Feast's improved illusion of space when it is seen *in situ,* it may be said that the relief more closely approaches the effect of the so-called Albertian window than commercial illustrations of it would suggest.[109] But can one assume that Donatello calculated these effects by designing the relief with a distorted perspective to be optically corrected by the observer's eye? The complexity of the Pecci tomb shows that this is possible. But in addition there is another equally plausible and complementary explanation: the presence of optical distortions that naturally occur in the course of relief modeling. Such distortions are so common that they never elicit scholarly comment, but their effect on the appearance of the completed image cannot be ignored. These distortions are seen most easily in heads of medium relief that are turned in three-quarter view. When observed from their normal, frontal viewpoints, such heads look quite correct. When the faces are seen straight-on, however, one invariably notes that the side closer to the background (necessarily in low relief) is pulled forward so as to be visible from the front and to give the face a better visual balance. (The extent of this type of distortion naturally depends on the artist's particular style and the head's angle and degree of depth.)[110] In spite of its small size, the head of Herod in the Feast clearly shows this effect (fig. 41). The left side of the face is obviously much broader than the right, which, in turn, is sharply angled toward the adjoining wall. Similarly, the eyes are set at unequal distances from the bridge of the nose. These seeming deformities are the normal result of Donatello's adjusting the figure to look its best, from his own viewing position, during its modeling. The artist naturally assumed that the head would normally never be seen from the acute angle necessary for a face-on view. But it is this natural, almost intuitive (but still conscious) technique of modeling that not only explains the more logical direction of Herod's gaze when seen from above, but is responsible for the spatial structure of the whole relief. For it would have been entirely consistent with Donatello's awareness of optical effects for him to have continuously checked the work's apearance from its intended angle of observation during the process of modeling. In this way the sloping of the foreground floor would have logically taken on its destined illusion of spatial recession, and the figures that populate it would have been given their just positioning in the space created by its perspective.[111]

* * * * * *

---

[109] In spite of his rejection of a calculated high viewing position for the relief, Paoletti (1967, 84) stresses its relationship to the "Albertian window."

[110] Typical examples of this effect may be seen in Antonio Rossellino's Christ Child in the Madonna and Child reliefs of S. Croce and the tomb of the Cardinal of Portugal in S. Miniato. (It is not accidental that face-on illustrations of this type of figure are very rarely published, since the resulting distorted viewpoint is so obviously at odds with the sculptor's original intentions.)

[111] Pope-Hennessy points out a related if ultimately different situation in the Pazzi Madonna (Berlin-Dahlem). Of this panel he notes that "where other sculptural Madonnas are planned

As previously noted, Donatello's Feast of Herod was followed within a few years by the highly innovative, and optically more complex, tomb slab for Giovanni Pecci. Having already developed a whole repertoire of optical corrections applicable to freestanding sculpture (culminating, shortly after, in the bronze David), by the mid-1430s Donatello was capable of applying optical elements to the relief with equal dexterity. It is in fact about this same time that the sculptor produced a fascinating hybrid of nearly freestanding sculpture and low relief, a work in which, not unexpectedly, one may see a subtle application of visual correctives to a variety of perceptual problems.

The Cavalcanti Annunciation in S. Croce (fig. 42) is not documented, but Janson has convincingly argued that the work is still *in situ.*[112] And while there is a possibility that the relief has been relocated from one wall of the church to another, the evidence of Donatello's use of optical adjustments indicates that at least the present elevation of the work (slightly above eye-level at the base) is approximately correct (fig. 43). The most obvious of these effects is the purposeful distortion of Gabriel's face which, seen head-on, is overly broad and unusually heavy in the jaw (fig. 44).

---

in relation to real space, the space of the room in which they stood or hung, Donatello's is self-contained; it is enclosed in a kind of perspective cage." The relief, Pope-Hennessy goes on, does not show an attempt to produce a unified perspective scheme, but rather "the relevance of the diagonals established by the corners of the ceiling is to the relief as pattern not to the relief as space, and the rendering of the receding surfaces, at the sides and on the top, cannot be regarded as other than empirical. There is, moreover, an essential difference between the way in which we see the carving in photographs and the way in which Donatello intended that it should be seen. The viewing point postulated in photographs is in the center of the relief, but the true viewing point is, as we might expect, where the guiding diagonals coincide in the center of the base." (Pope-Hennessy, 1976, 172f. [1980, 72ff.].)

It has been suggested by A. Parronchi (*Studi su la dolce prospettive,* Milan, 1964, 313–48 [originally published as "Le 'misure dell'occhio' secondo il Ghiberti," *Paragone,* 133, Jan. 1961]) that in the Gates of Paradise Ghiberti created an effect similar to that suggested here for Donatello's Feast (and, as will be seen, later works). According to Parronchi, Ghiberti, utilizing medieval optical principles of Alhazen, Bacon and Peckham in preference to the new perspective ideas developed by Brunelleschi, adjusted certain panels of the portal for particular viewing positions. It is tempting to accept Parronchi's suggestions of Ghiberti's use of such optical corrections since, regardless of origins, they would place Donatello's similar adjustments into a broader artistic context. Unfortunately, Parronchi's basic thesis of Ghiberti's use of medieval optics is not entirely convincing, nor is his selective use of diagrams on various panels of the doors. One might accept such a restricted use of the suggested system when applied to adjacent panels, such as the stories of Isaac and of Joseph. But it is difficult to see why only one of the upper panels, the Creation, and not its partner should be so treated. Finally, and most important for the subject under discussion here, not only are the panels in question undistorted from straight-on views, they are also not visually improved from the viewing angle postulated by Parronchi. Indeed, they seem distorted when seen from those positions, whether in the original or in Parronchi's illustrations.

[112] Janson, 1957, 104f. Paatz suggests that the relief was on the screen of the monks' choir, but in either situation it would have been above eye-level and over an altar. (W. and E. Paatz, *Die Kirchen von Florenz,* Frankfurt, 1940–54, 1, 594, 641 n. 256.) For Janson (1957, 107f.) the relief can be dated ca. 1428–33 (the Annunciation figures themselves 1428–30, the architecture of the tabernacle 1430–32, the terra-cotta putti on top after 1433). Pope-Hennessy (1971, 255) suggests that the entire work was more likely "executed as a unity about 1436–40."

These distortions, in particular that of the jaw, were necessitated by Donatello's decision to tilt the angel's head back toward the niche wall. Seen from below, however, the proportions of Gabriel's face appear normal (fig. 43); the distortions disappear completely and, indeed, help to create the illusion of the figure's well-proportioned head and serene expression.[113] Equally subtle is the relation of the viewer's position to the unique design of the throne behind Mary. Because the nearly freestanding figures of the tabernacle are set into a relatively shallow space, the throne had to be more suggested than depicted. The resulting low, nearly flat, relief sufficed for the chair's vertical elements, but the horizontal, barely projecting seat could not alone create the expected illusion of depth. A possible solution to this problem would have been to construct the chair in artificial perspective. But due to the figures' high relief and the viewer's horizon being below the lower frame this probably struck Donatello as inappropriate and potentially distractive to the scene as a whole. Instead, the artist indicated the throne's depth by showing the Virgin's mantle falling on the seat and draping over its leading edge. This effect is only fully sensed from below the relief (fig. 43) since only from that position does the slight projection of the seat hide the shallow projection of the drapery and thus seems logically to support the cloth that falls over its front. The final effect is not strongly illusionistic, but it was not meant to be; a stronger illusion would have disrupted the ancillary role intended for the throne and the back wall of the enframing niche.[114]

The final but most obvious evidence of Donatello's concern for the *in situ* effect of the Annunciation is found in the design and positions of Gabriel's wings. Seen from pavement level, the wings appear generally aligned, with the left just visible over the right. This is made possible, however, by Donatello's having carved the left wing in low relief with little, if any foreshortening, while raising it considerably over its mate. In this way the far wing is not concealed from below and the total image is given greater visual balance. In short, this, like the relief's other adjustments, nicely exemplifies Donatello's ability to use optical correctives to support rather than dominate the dramatic unity of his sculpture.

* * * * * *

Roughly contemporary with the Cavalcante Annunciation are two—almost a pair—of Donatello's most widely admired works: the exterior pulpit for the Cathedral of Prato and the "Cantoria" for the Cathedral of Florence (in, respectively, the Museo dell'Opera del Duomo, Prato [replaced by a copy], and the Museo dell'Opera del Duomo, Florence).[115] Both sets of reliefs are known to have been placed well above the spectator's eye-level—in Prato about twenty to twenty-five feet, in Florence at least ten feet higher—and would therefore be expected to show active optical corrections. Neither relief does so, and while the reasons for this are not conclusive, several possibilities can be suggested.

---

[113] Somewhat less important, but still worth noting, is that the tuft of hair over Gabriel's forehead, while presumably centralized, is actually slightly displaced to the figure's right where it is easier to see from below (see fig. 44).

[114] Cf. Janson's criticism of Rosenauer's discussion of the Virgin's chair and its perspective (review, 138, [see note 3 above]).

In regard to the earlier Prato reliefs (commissioned in 1428 but probably executed for the most part between 1433 and 1438), the fact that Donatello shared the commission with his then partner, Michelozzo, may be a mitigating factor. It does seem that Donatello was responsible for the figural reliefs of dancing putti, but the extensive, and qualitatively variable shop work in these pieces is generally recognized. More important, although the carving of the figures is not extremely shallow, the reliefs are relatively planar and, as such, do not lend themselves to optical corrections (except, of course, in the extreme, anamorphic distortion of the total figure). Moreover, the nature of the pulpit's design works against the use of optical corrections in that its circularity invites constant movement of the observer and, therefore, multiple viewpoints. Finally, the lack of any fictive architectural or structural background, and the concomitant absence of artificial perspective, removes an obvious opportunity for the kind of adjustments found in the Pecci tomb, the Feast of Herod and the later "Resurrection" pulpit in S. Lorenzo.

The Florentine "Cantoria" offers a related but somewhat more complex situation, for here we know of early references to what may be termed passive optical corrections. The anonymous author of the "Libro di Antonio Billi" (before 1530) describes Donatello's figures as being "only roughed out and not finished, yet from the ground level . . . are more effective and seem more strongly modeled than those of the main organ, by Luca della Robbia, which have been finished with care but look less well from the ground."[116]

"Billi" does not, however, say that the effect he describes was purposeful, and his remarks, rather than being based on strong tradition, seem to be reflective of Cinquecento taste. Nevertheless, from Vasari[117] to our own day[118] it has been often accepted that "Billi's" opinion also indicated the artist's intentions. An expected exception is Janson, who alternatively suggests that the unfinished appearance of the reliefs, apparently carved "for the most part in 1436–38 . . . is better explained by this tight schedule than by any subtle aesthetic calculations." Janson adds that it is likely that

---

[115] For the Prato pulpit, see R. W. Lightbrown, *Donatello and Michelozzo. An Artistic Partnership and its Patrons in the Early Renaissance*, London, 1980, 2 vols., 233–48. See also Janson, 1957, 108–18, figs. 158–161, and, for the "Cantoria," 119–29, figs. 163–174.

[116] *Il Libro di Antonio Billi*, ed. C. Frey, Berlin, 1892, 40 (trans. quoted from Janson, 1957, 121).

[117] G. Vasari, *Le Vite* . . . , Florence, 1550, repr. by C. Ricci, Milan-Rome, n.d., 1: 49, 249, and Vasari-Milanesi,170f.

[118] E.g., Seymour, 1966, 95f.

Donatello "counted on distance and dim light to hide the often rather crude carving of the Cantoria reliefs."[119]

Now, there is good documentary evidence that, in spite of the "Cantoria" reliefs' rough surfaces, the *operai* of the Cathedral ultimately accepted them as complete. In this respect the opinions of "Billi," Vasari, et al., find support. Nevertheless, Janson's reasoning and conclusions are persuasive, not only because of the "crude carving" of much of the marbles, but because of the inconsistency of finish between major areas of the work. A textured surface might well indicate an intention to help a relief carry visually from a distance, but one would expect a certain degree of uniformity in such a technique.

Considering these points, and in light of the similarities between the "Cantoria" and the Prato pulpit, we should not be surprised that no active optical corrections have been noted in the Florentine reliefs and, indeed, with one slight exception, none appear to be present. The exception, however, is interesting in that its presence reminds us how judicious Donatello could be in the application of these visual devices. The detail in question is that of the canted ground line that allows the figures' feet to be seen from below.[120] That this adjustment was seen as necessary here but not at Prato is undoubtedly due to the greater depth of the Florentine reliefs and the deeper "stage" for the dancing figures. But beyond this detail, visual adjustments seem not to have been used, and the reasons for this parallel the reasons for their absence in Prato. First, it is generally agreed that while Donatello's hand is more in evidence in the "Cantoria" than the Prato pulpit, the later reliefs are still the product of more than one sculptor. Similarly, although the reliefs are not seen mounted in a circular frame as found in Prato, the wide, continuous frieze encourages variable viewing positions. Finally, the "Cantoria" also contains no perspective elements and thus no perspective illusionism. In sum, it seems clear that once again Donatello did not see the necessity or advantage of applying more specific optical adjustments for the low placed, but moving observer. Where a general adjustment (the sloping ground line) was seen as useful, however, it was successfully employed.

* * * * * *

In his discussion of Donatello's reliefs for the walls and pendentives of the Old Sacristy in S. Lorenzo (fig. 45), Janson notes that

> not only the narrative scenes but also the more boldly modeled evangelists are difficult to "read" from the floor of the sacristy, both because of their distance from the beholder and because they receive most of their light from below (hence

---

[119] Janson, 1957, 128.

[120] See Janson, ibid., figs. 171, 174, in which this detail is particularly clear.

the difficulty of photographing them effectively). Donatello's extensive use of color must be viewed, at least in part, as an effort to remedy this condition.[121]

But while Janson may well be correct, it is still arguable whether or not this use of color can be considered an optical correction as so far defined. There are, however, other adjustments to these works that have clear, corrective purposes, although, as we shall see, their application is both varied and inconsistent. Varied, because there are different viewing positions for the room's two sets of tondi, and "inconsistent," because Donatello used the narrative reliefs' architectural settings as an opportunity to experiment with several types of optical and perspective approaches (fig. 45).

To begin with, the two sets of subjects—the Four Evangelists on the walls, the Legend of St. John the Evangelist on the pendentives—show Donatello obviously reacting to the different viewing conditions under which each group is seen. The decision to use optical compensations in the Evangelist tondi (figs. 46–49) must have been easier than that for the pendentive narratives since all four Evangelists were at an unavoidable angle to the onlooker's view. To treat them in relation to their high placement would have been self-evident to Donatello. The effects thus produced have been frequently mentioned, in particular by Hartt,[122] and include the *sotto in sù* views of both figures and furniture, the feet that extend over the "floor" edges, and (not previously noted) the fact that the tops of the Evangelists' desks are not flat but rather are canted up to give each saint's symbol full visibility from below.[123]

Far more problematic than the Evangelist reliefs are the pendentive tondi. As previously mentioned, these works are set at roughly forty-five degrees to the vertical and can thus be easily seen straight-on by the upward-looking observer from across the sacristy (fig. 45). For this reason Donatello should have felt little if any need to suggest, let alone compensate for, a low viewpoint. And, at least for the figures, he made no such adjustments in three of the four scenes: St. John's Vision on the Isle of Patmos; the Raising of Drusiana; and the Liberation from the Boiling in Oil. Moreover, in only one of these three scenes, St. John's Vision, did the sculptor suggest the viewer's low point of observation. In this case the trees are depicted as converging upwards, a device (as White has shown) that allows them to conform to the angle of the ribs of the dome above and relates the relief to the room's architecture.[124] The two other reliefs, however, are normal in this respect and the architecture is seen from an ideal point of view, with a horizon at, or only slightly above, the viewer's in each instance.[125] But, as often noted, the Assumption of St. John, although seen in exactly the same circumstances as its companion pieces, not only shows figures from below, but reveals an extraordinary *sotto in sù* convergence of its architectural lines. Similar to, but more emphatic than the inward leaning trees in the Vision tondo, the figures and architecture here are obviously designed as if seen from below. This feature has been often commented upon, not merely because it produces a remarkably dramatic and unmistakably intentional effect, but because it is unique in Donatello's oeuvre (and, indeed, seems to have had no successor until the converging architectural effects of Baroque ceiling painting).[126] But equally noteworthy is the generally ignored fact that this relief proves (if proof were necessary) Donatello's experimental use of optical devices, and shows him applying them opportunely and according to his own aesthetic needs rather than the rules of decorative unity.

---

[121] Janson, 1957, 135. Seymour (1966, 95f.) also points out the similar part played by the background of mosaic on the "Cantoria" in heightening its visibility in the dim light of the Duomo. Clearly Donatello's use of gilding in several reliefs (i.e. the Cavalcanti Annunciation [gold restored], the Miracles of St. Anthony on the Santo altar in Padua, and the S. Lorenzo "Resurrection" pulpit), had, first, a decorative intent, but that effect is inseparable from the use of gold as a device to give the work greater visibility in low light.(Cf. color illus., Castelfranco, 1963, pls. XII–XV, XXIV–XXX; XXXII–XXXVIII, and G. Gaeta Bertelà, *Donatello,* Florence, 1976, pls. 41–46, 49–51, 54–55, 61). See Janson (1957, 133) and Paatz (*Die Kirchen,* 2, 563, n. 197) for a discussion of the condition of these works. As Janson notes, there are also traces of color in the stucco reliefs of SS. Stephen and Lawrence and SS. Cosmas and Damian over Donatello's bronze doors. The Evangelists, while left largely white, had blue backgrounds, with some details (halos, architectural trim, etc.) picked out in gold. The dating of the two sets of tondi between 1434 and 1443 proposed by Janson (1957, 132ff.) has met with general agreement.

[122] Hartt, 1973, 259.

[123] It is unusual that while all the lectern/desks are shown from below, they are not all depicted in the same fashion; i.e., those of SS. Matthew and John have sides that converge more acutely than those of their companions and are thus likely meant to represent furniture whose sides actually lean in slightly (fig. 48).

* * * * * *

Following the completion of the Old Sacristy decoration in the early 1440s, Donatello left Florence for Padua where he was to spend ten years in the creation of the high altar and Crucifix for the Santo, and the monument to Gattamelata. As noted in the earlier discussion of this work, none of the freestanding figures displays noticeable investigations of active optical corrections. The possible reasons already offered for this naturally do not apply to the altar's narrative reliefs of the Miracles of St. Anthony. But while these four scenes do, in fact, pair according to the slight differences in their low vanishing points, they do not otherwise contain significant compensation for particular positions of observation.[127] The basic reason for this is the low, frequently *schiacciato* relief that excludes such effects by eliminating optical foreshortening from all but the most extreme angles of view.[128] This pictorial approach in turn provides the means for the compositional and spatial complexity of these reliefs, not to speak of a perspectival experimentation that even includes the abandonment of a unified perspective.[129] But although Donatello did not utilize optical corrections in his Paduan panels, this does not mean that he afterward forsook the advantages of such techniques as applied to the relief, for the evidence of this continued interest can be seen in the so-called "Madonna del Perdono."

---

[124] White, 1967, 154.

[125] See note 29.

[126] It should be made clear, however, that even this relief is not actually designed to be seen from a noticeable angle. The phrase used above, "as if seen from below," is carefully chosen, since the relief (as previously mentioned) is designed to be seen from straight-on (and, indeed, the figures are not lengthened to compensate for optical foreshortening). One will note that the *sotto in sù* effect works when the relief is viewed from the front since it suggests rather than actually requires a low viewing position. The narratives do, however, justify an implied low point of view. For both the Vision and the Assumption include major figures in the sky, and the latter, in addition, is a scene that depicts a heavenward movement of its main subject.

The "Madonna del Perdono" is a marble tondo carved for the Cathedral of Siena about five years after Donatello's return from Padua in 1453 (figs. 50, 51).[130] While not usually considered completely autograph in execution, this work has been widely accepted as having been designed by Donatello and cut, at least in part, by his own hand.[131] The relief, now over the exterior portal of the Duomo leading to the Cappella del Voto (right transept), has been moved a number of times since its original placement, but was apparently first in the chapel of St. Calixtus.[132] In any event, it is generally agreed that, as indicated by the exaggerated perspective of the coffers in the upper, inner frame, the work was made for a high position and a relatively acute angle of observation. More important, it has been noted that the main figures (but particularly Mary) show an elongation that is meant to be optically foreshortened when seen from below. The comparative effects of the frontal and low views have, in fact, been illustrated and succinctly discussed by Carli, who points out that the Virgin projects progressively from the bottom of the relief to the top, and that her head overlaps the "truly extraordinary invention" of the sharply foreshortened frame. Carli also reminds us that the illusionistic effect of the tondo is far greater *in situ* than as rendered by the camera, since the latter tends to exaggerate the foreshortened effect.[133] Nevertheless, a correctly taken *sotto in sù* photograph captures some of the results Donatello intended in the Virgin (fig. 51).

---

[127] As White has shown in his convincing reconstruction of the Paduan altar, the bronze narrative reliefs were placed so that the horizon lines of each pair matched that of the observer standing relatively closely on the top step of the front or back of the structure. See J. White, "Donatello's High Altar in the Santo in Padua," *Art Bulletin*, 51, 1 (1969): 1–14, 51, 2 (1969): 119–141 (see especially 124f.).

[128] Such as found in the Pecci slab. (The large size of the latter also aids the illusionistic effect.) On the other hand, the Ascension of Christ and Delivery of the Keys (Victoria & Albert Museum, London) is designed with a low horizon, but because of its *relievo schiacciato* (particularly delicate in many details) it does not reveal any important optical corrections and should not be seen from a sharp angle.

[129] Specifically, The Healing of the Irascible Son.

[130] So called because of its placement near the Porta del Perdono (Carli, 1967, 34).

[131] Ibid. Cf. also V. Herzner, "Donatello in Siena," *Mitteilungen des Kunsthistorischen Institutes in Florenz*, 15 (1971): 168f., and Pope-Hennessy, 1976, 178 (1980, 84f.).

[132] Herzner, "Donatello in Siena," 168f.

[133] Carli, 1967, 36f. See also Pope-Hennessy, 1976, 178 (1980, 84f.). The Madonna and Child with Angels, known as the Chellini Madonna (Victoria & Albert Museum, London),

It is worth noting that this attempt to create an illusionistic effect dependent upon a particular point of observation occurred in the same city in which Donatello's most innovative perspective illusions (to date) are also to be found: the Feast of Herod and the tomb slab of Bishop Giovanni Pecci. Although the impetus for the optical effects of the "Madonna del Perdono" certainly must be traced to Donatello himself, they may also reflect a Sienese taste for such devices that had been stimulated by the sculptor to begin with. For it does not seem coincidental that there are several such works by the artist and his followers in Siena, and it is evident that the initial successes of both the Feast and the Pecci slab were instrumental in the repetition by local artists of some of the same and related ideas. As noted earlier, there are many variations on the Pecci slab in the city[134] and at least one clear reflection of the later "Madonna del Perdono" in a Christ as Man of Sorrows.[135] These echoes of Donatello's techniques of optical correction are of some interest in the development of Sienese Quattrocento sculpture, but there is little reason to believe that the authors of these works were doing anything more than repeating *exempla* of a famous artist. There is one monument, however, that does more closely approach Donatello's conceptions in this respect and that is an innovative work of art in its own right.

The memorial to Cristoforo Felici (fig. 52) is the work of Urbano da Cortona (1426?–1504), a documented collaborator of Donatello in Padua who later worked extensively in Siena.[136] This relief, which probably

---

is dated one to two years before the "Madonna del Perdono" and was clearly designed with the same kind of correction for its placement on a wall above eye-level. The deeper inner frame at the top of the relief indicates a low viewpoint and there is a hole in the top of the plate's back from which it was once hung. (It is improbable that the relief would have actually served as a container and thus have been placed on a flat surface, though such a position would produce the same optical conditions as hanging it somewhat higher than eye-level.) While I have not seen the original of this work, the improved effect of a low viewing position is suggested by a comparison of the frontal view published by Pope-Hennessy (1976 [1980], fig. 21) and a slightly foreshortened one published by Poeschke (*Donatello—Figur und Quadro*, pl. LXIX, fig. 114; see note 3 above).

[134] E.g. the tomb slabs of Pietro Bulgarini (d. 1456; atrium of the Ospedale); Bishop Alessio Cesari (d. 1464; cloister of S. Francesco); Nicolò Piccolomini (d. 1467; small museum of the Osservanza); and Antonio Bertini (d. 1486; S. Gerolamo) (C. del Bravo, *Scultura Senese del Quattrocento,* Florence, 1970, 84, figs. 291, 292). Others can be found in the transept of S. Francesco, Siena.

[135] Arch of the Cappella Maggiore, Church of the Servi, Siena (after 1471). See del Bravo, *Scultura Senese,* fig. 294.

[136] See P. Schubring, *Urbano da Cortona: ein Beitrag zur kenntnis der Schule Donatellos und der sieneser Plastik der Quattrocento,* Strassburg, 1903; "Urbano da Cortona," in U. Thieme and F. Becker, *Allgemeines Lexikon der bildenden Künstler,* Leipzig, 33 (1939): 591; Pope-Hennessy, "Three Stucco Reliefs," pt. V of "Some Donatello Problems," in *Studies in the History of Art Dedicated to W. E. Suida on His Eightieth Birthday,* London, 1959, 61–65; and Seymour, 1966, 147, 274.

dates just after Felici's death in 1463,[137] is located on the right wall of the second chapel to the right of the choir of S. Francesco.[138] The memorial shows the deceased lying on a flat bier in a space created by four short piers (and a paneled back wall) supporting an entablature-like sarcophagus. The numerous Donatellian elements of the work, including its perspective illusion of the effigy between the piers, are fairly obvious and have been generally acknowledged.[139] But the monument reveals another, unrecognized, reference to Donatello's ideas: the requirement that the work be seen from below (fig. 53). Through its perspective, the shallow relief suggests a fairly deep space to accommodate Felici's effigy, but only when the work is seen from ground level does the apparent depth of this space take on its full illusionistic impact of penetrating the wall. This illusion is so strong, in fact, that it is difficult to visualize just how low the carving actually is. And, naturally, the effect is fully appreciable only when the work is seen from below in natural light.[140]

* * * * * *

The Donatellian inspirations for the details of the Felici tomb are varied. But the *sotto in sù* illusionism of its perspective construction seems due not only to Donatello's precedent in Siena, but perhaps specifically to effects already visible, or in the process of being created, in the artist's final works in Florence: the bronze pulpits of S. Lorenzo. For these bronzes are not only Donatello's last sculptures, they also contain his final thoughts on his life-long concern with visual adjustments for the observer's point of view.

The compositional and iconographic complexities of both pulpits, as well as the wide differences between them in style and design, have contributed to their remaining one of the thorniest of Donatello problems.[141]

---

[137] Felici died on 22 November 1463 (Pope-Hennessy, ibid., n. 54); the last digit of the date on the monument (MCCCLXII) is broken off.

[138] Seymour (1966, 147) incorrectly places the monument in the cathedral.

[139] See Schubring, *Urbano da Cortona*, 56. Not known to Schubring is the borrowing from Donatello's "Cantoria" of the shell-and-dolfin motif on the upper cornice. (This architectural detail was discovered only in recent years; cf. reconstruction in Janson, *The Sculpture of Donatello*, Princeton, 1963, 2nd ed., fig. 50, based on G. Kauffmann, "Zu Donatellos Sängerkanzel," in *Mitteilungen des kunsthistorischen Institutes in Florenz*, 9 [1959]: 56ff.)

[140] Less dramatic as an optical corrective device, but still noteworthy, is Urbano's treatment of the far side of Felici's chest and his drapery. Though not entirely successful in their final effect, these areas were pulled forward and upward in an effort to correct for the spectator's low viewing position.

[141] The only date directly connected to the creation of the pulpits is the nearly invisible inscription, "1465 ADI.15 GVG," on the Martyrdom of St. Lawrence (see G. Previtali, "Una data per il problema dei pulpiti di San Lorenzo," *Paragone*, no. 133, Jan. 1961, 48ff.). The inscription seems to have been inscribed in the wax or clay, but whether the date refers to the end of the modeling process for this particular relief, the date of its casting, or even the date of the completion of the whole pulpit, remains conjectural.

Over the years the pulpits have been the subject of extensive published research, even including entire monographs.[142] But in recent years there has been a greater emphasis placed on their differences and apparent incongruity as pulpits, and thus, on the determination of their original purposes and arrangement. These researches have provided a myriad of fascinating points to ponder, but they are naturally of most immediate concern to this study insofar as they account for the pulpits' original positions vis-à-vis the observer. For while the evidence is clear on their approximate height and location from the early sixteenth century on, their intended locations may have been very different. As it turns out—I believe significantly—the most viable of the newer proposals on this question is one quite compatible with the assumption made here of an above-eye-level placement for the one pulpit that contains evidence of Donatello's continued experimentation in optical correctives.[143]

---

[142] The literature on the pulpits up to 1956 is summarized by Janson (1957, 211ff.), who adds his own cogent discussion to the subject (209–18). The problems and bibliography relevant to the works are also presented by Pope-Hennessy (1971, 266–68) and, most recently, Poeschke (*Donatello—Figur und Quadro* 85ff., bibliography note 260). (See also note 143 below.)

[143] These studies include N. Huse, "Beiträge zum Spätwerk Donatellos," *Jahrbuch der Berliner Museen*, 10 (1968): 125–50; V. Herzner, "Die Kanzeln Donatellos in San Lorenzo," *Münchner Jahrbuch der bildenden Kunst*, 23 (1972): 101–164; L. Becherucci, *Donatello: i pergami di S. Lorenzo*, Florence, 1979; and A. Parronchi, "L'altare Maggiore di San Lorenzo," in *Donatello e il potere*, Florence, 1980, 211–36. For Huse the four large reliefs of the "Passion" pulpit (i.e. all but the Agony in the Garden), were designed for the commissioned, but never finished, bronze doors of the Sienese Duomo (1457–61). Both Huse and Herzner (the latter discussed below) are opposed by Becherucci, who proposes that the original purpose of the reliefs, particularly those of the "Resurrection" pulpit, was as part of the High Altar of S. Lorenzo, a construction that would have been comparable to Donatello's altar for the Santo in Padua. Becherucci suggests that since the Florentine altar was not finished, members of Donatello's shop pieced its remnant parts together (or completed the work so as to allow such a conversion), to form the present pulpits.

In terms of the subject at hand, Becherucci's solution, like that proposed by Herzner, is compatible with an assumption that the reliefs were originally above eye-level. Becherucci, however, also insists that the architectural divisions and backgrounds of the Resurrection pulpit are much too clumsy to have been done by Donatello himself and therefore were added by students to the master's unfinished wax models. I do not concur with Becherucci's qualitative assessment of these details, but in addition I find the idea unacceptable that such areas would not have been indicated by Donatello in his original designs or, far more important, that they could have been added later without having to remodel major portions of the reliefs almost unanimously accepted as Donatello's. So many of the "Resurrection" pulpit's figures are so intimately related to the architectural setting (the Baptist on the division between the Descent and the Resurrection, and Christ in the latter scene, to name only the obvious), that it is almost inconceivable that their backgrounds and scene dividers could have been missing or significantly different when these details took shape. Becherucci's theory of the pulpits being originally destined for an altar does not depend on her rejection of these architectural details, and in itself has some attractive points. However, it is interesting that Parronchi's attempt to flesh out Becherucci's ideas by a hypothetical reconstruction of the altar is (perhaps unavoidably) filled with internal inconsistencies. For example, Parronchi puts the Three Maries at the Tomb on the far left side of the "Resurrection" pulpit's three-relief front, and places the Pentecost in the same position at the far right. It is then suggested that the (now) inside architectural dividers of these reliefs were not originally part of the altar design, since their perspective angles conflict with a unified perspective viewpoint

The viable proposal alluded to is that of V. Herzner.[144] After a detailed technical, iconographic and stylistic analysis, Herzner convincingly suggests that the front (nave) side of the "Resurrection" pulpit (fig. 54), representing, in three continuous reliefs, the Descent into Limbo, the Resurrection, and the Ascension (probably more properly called Christ's Appearance to the Apostles), was not only cast separately from the rest of the reliefs, but almost assuredly was created earlier and for a different purpose. The other reliefs (two end scenes representing the Three Maries at the Tomb and Pentecost, and one relief on the opposite long side, the Martyrdom of St. Lawrence), would have been later adapted to the front panel to form the pulpit as we know it now. Herzner further postulates that the front plate was originally destined to be part of a wall tomb for Cosimo de'Medici to be placed in the choir of S. Lorenzo. More precisely, the relief would have been part of a socle for the tomb, over which would have been an arcosolium or a wall niche that would have contained Cosimo's sarcophagus.[145] Finally, on the indirect evidence of several documentary sources, Herzner concludes that the tomb was never finished because of a spiritual crisis in Cosimo's life that led to his shunning of such an ostentatious monument.

If Herzner is correct, and his arguments have much to recommend them, the reliefs of the pulpit's front face would have been seen at a height several feet over eye-level, probably comparable to their present elevation. Additionally, the fact that the remaining panels were later adaptations to the pulpits would partly explain the differences in the treatment of their perspective designs and their lack of the kind of optical corrections visible in the front reliefs. In any event, it is on the front face that Donatello created some of his most successful effects through such adjustments.

The three reliefs of the front of the "Resurrection" pulpit are unified by wall-like partitions set in wide-angle perspective (fig. 54).[146] In all of these scenes the true depth of the modeling precluded the use of an exact, Albertian, one point perspective, and the outside reliefs have higher vanishing "areas" than that of the central panel (the former above the ball frieze, in the vicinity of Donatello's centrally placed signature tondo, the

---

centering on the Resurrection relief. He thus removes the wall dividers in his reconstruction. Never explained, however, is why the Maries at the Tomb retains its (obviously original) center divider-wall (on the tomb's roof) that shows a central perspective that is incompatible with the proposed spatial organization of the whole altar frontal. The reconstruction contains other, similar difficulties.

[144] See note 143.

[145] Herzner, "Die Kanzeln Donatellos," 110. Thus, Poeschke's objection (*Donatello—Figur und Quadro,* note 260) to Herzner's ideas because "the dimensions of the bronze plate are excessively large for a sarcophagus front," is based on a misreading of the latter. In fact, Herzner's best analogy for the form of such a socle, the marble relief by Tino di Camaino for the monument for Cardinal Riccardo Petroni (ca. 1318; Cathedral, Siena), is approximately the same size as the front of Donatello's "Resurrection" pulpit (without the added upper cornice).

[146] See note 143.

latter directly below in the frieze itself). Nevertheless, the convergence of the orthogonals of these partitions is generally the same for all of the scenes and clearly indicates a unified viewpoint.

Now, such a high horizon may seem at odds with a presumed low viewing position for the observer. But this is so only if one assumes that the reliefs were intended to convey the complete illusion of an actual extension of the observer's space, something that is unlikely in the extreme.[147] Indeed, even in the pulpit's one relief in which the vanishing point is below the scene's lower border (the Martyrdom of St. Lawrence [fig. 63]), that point is still far above the spectator's likely viewing position.[148] Nevertheless, the high vanishing points of the pulpit's front (and end) reliefs have clear advantages for a low observation position, since details can be seen that would otherwise be blocked out perspectively from below. A true *sotto in sù* perspective, like that of the St. Lawrence panel, could have been used throughout, of course. But such a vanishing point, with its concomitant obscuring of the floor and background details, would have been awkward for at least two of the three reliefs on the main face. For in both the Resurrection and the Ascension the figure of Christ is traditionally, and logically, raised over the surrounding figures and placed deeper in space (figs. 57, 59).[149] A *sotto in sù* arrangement, with a strong perspective recession, would have pushed Christ into the background or (had He been placed at the front plane of the scene) would have attracted the eye beyond Him. In either instance, the focal point of the scene would have been de-emphasized. Rather, it must have seemed more effective to use a vanishing point at, or somewhat above, an ideal horizon, thus leading the observer's eye to the main figure. (Not accidentally, in both scenes an orthogonal forming the cornice of a pedimented wall divider leads to Christ's head.) In addition, the use of a shallow space allowed all of the figures to appear approximately the same size, thus minimizing the effect of figures in front of the Savior. But such a construction has its own drawbacks, and it became necessary for Donatello to tilt the floors of the connected scenes forward, not only to emphasize the figures of Christ in the Resurrection and the Ascension (where, in fact, He stands on a rock or small ground swell), but to allow important details on or close to the ground line to be visible from below (fig. 54).[150] So, for example, the lower legs of the kneeling Apostles and Mary in the Ascension, and the feet of the young boy standing to the far left in the Descent, are still visible in spite of the low point of view (figs. 55, 56, 59, 60). Interestingly, because the larger male figures to the left in the Descent are shown as standing below the floor line, the floor is flat rather than continuing the angle of the ground beneath the adjacent boy. In this way Donatello hides the abrupt cutting of the larger figures' legs and gives the illusion that they are standing at a level below the frame's edge. But Donatello goes further than merely a selected sloping of the floor. For with the splayed but generally unified perspective used in all three narratives, he has in effect told the observer that the viewing position for all three reliefs should be below and dead center of the entire work. And from this position, turning to view the two side scenes, one sees the justification of a number of otherwise odd elements of composition and distorted figural proportions.

---

[147] See note 103 and the related textual discussion of the Feast of Herod relative to its lack of true illusionistic character.

[148] See note 104.

[149] This is also true, of course, for the placement of the Virgin in the Pentecost on the pulpit's right end (fig. 62).

[150] As we have seen, such tilting of the ground line is an old optical device; it is more noticeable here largely because of the addition of the strongly foreshortened partitions between each scene.

The greatest changes in this regard are, naturally, found in the two outer reliefs, since they are to be seen not only from below but from an angle. But even the centrally placed Resurrection reveals an increased sense of depth when seen from below (figs. 57, 58). The sleeping guards, for example, no longer appear to be precariously placed on a too-narrow stage apron in front of the sarcophagus, since the floor, and thus the true depth of the relief, is hidden. But, significantly, because the ground line is slightly tilted forward, none of the figural details of the reliefs' frontal plane is lost to view. For the same reasons the upper surface of Christ's sarcophagus, supposedly opened but from above seen to be solid, is visible from below only on edge. Finally, Christ's body, and especially His head, is proportionally more believable and dramatically more convincing when subject to the natural foreshortening of a low viewpoint.

Among the optical adjustments in the pulpit's outside scenes is the apparent change in direction of several heads in the Ascension (figs. 59, 60). For example, from a frontal view the Apostle on the far left and the young Apostle closest to Christ (directly opposite Mary) appear to be staring outward. Seen from below and the left of the relief (that is, from the center of the pulpit but turning to the right scene), these faces seem to look at Christ directly. The same general effect can be seen in the second Apostle from the right in the front row and, to varying degrees, in almost all of the other figures. In addition, because Christ actually leans slightly to His left, when seen at eye-level He appears to look past Mary. Viewed from below and the left, however, His angled movement is visually straightened and His blessing gesture and glance are directed more towards her. There is, finally, one other small detail that helps to confirm Donatello's intention to orient this relief to the viewer standing below and to the left. There are three small angels next to and behind Christ's right arm and shoulder, but only one such figure on His left, and that one in a low position. It seems clear that the viewer is meant to assume the presence of other such angels behind Christ's left shoulder that are not visible from the viewer's angle of observation.

As one would expect, the Descent into Limbo, on the left side of the pulpit's front face, reveals optical correctives of much the same type seen in its companion reliefs (figs. 55, 56). The most evident of these are the elongated heads of Christ and the female directly behind Him, both of which take on much improved proportions when seen from below and from the right. In addition, as in the Ascension, several figures (the Baptist, in front of the scene divider, the two males next to him, the small demon at his feet) turn their heads more obviously toward Christ, whose own head no longer appears to crush that of the figure between it and the blind arch. In fact, there is a nearly palpable sense of urgency and drama in the scene that is missing in its traditionally frontal illustration. Indeed, all three panels, correctly seen, are strikingly successful in suggesting a real space, particularly in contrast to the true, quite shallow depth of their relief (fig. 61).[151]

Both the Maries at the Tomb and the Pentecost[152] have been given the same low viewing points, and thus the canted floors, seen in the pulpit's front reliefs. In this respect the Pentecost (fig. 62) is especially close to those works and, like them, benefits from the absence of a low horizon. A vanishing point beneath floor level would have obscured the figures furthest from the spectator (particularly Mary, traditionally the central focus of the scene), whereas the sloping floor avoided this difficulty while allowing the observer to see the saints' attributes spread on the ground before them.

The situation is somewhat different for the Maries at the Tomb because although the architectural perspective of the other reliefs is again used, only the ground at the far left and the small sets of steps at both ends of the loggia are tilted noticeably. But as the narrative action is essentially parallel to the picture plane, all of the main figures—and the all-important empty sarcophagus—are close to the forward limits of the scene and thus easily visible without substantial canting of the floor.

When these two reliefs are viewed *in situ* and compared to their appearances from frontal positions, they reveal no important optical corrections other than the mentioned slanting of their floors. Both scenes were, of course, to be seen from a central viewing position (compared to the angled view postulated above for the side panels on the front of the pulpit), and this lessened the need for optical compensation. But more important, both works appear to have been executed by members of Donatello's shop. Although the reliefs seem clearly to be of Donatello's invention, a noticeable awkwardness in many of their details strongly suggests a hand (or hands) other than the master's.[153] And without Donatello's personal attention, the reliefs were unlikely to have had optical adjustments incorporated into them, at least in any conscious way, beyond the obvious. The last relief of the "Resurrection" pulpit, however, is another story and presents different problems.

---

[151] Hartt (1973, 430) notes that this perspective does not show a view from above, but is rather an "arbitrary convention." Contradictorily, however, he adds that "although the projection looks false in photographs, from the floor it has the effect of establishing a very considerable space *in front* of the pulpits [*sic*], crammed with seething figures."

[152] Janson, 1957, figs. 433–439b, 459–463.

[153] Bertoldo di Giovanni and Bartolommeo Bellano are the names most often associated with these works (and, indeed, are the sculptors most often credited with the modeling and finishing of those parts of the pulpits not considered to be autograph work of Donatello).

* * * * * *

The Martyrdom of St. Lawrence (fig. 63) is unique to the "Resurrection" pulpit, having a true *sotto in sù* perspective. This apparent anomaly cannot be explained only by the possibility of the relief having been added to an originally different design (Herzner), since this circumstance applies equally as well to the pulpit's end reliefs already discussed. This design can, however, be justified by the subject itself as St. Lawrence in his particular martyrdom is normally shown in a horizontal position. The saint's story thus allows, and almost demands, his placement at the relief's foremost plane. This freed Donatello from the restrictions imposed upon him by the pulpit's other subjects. It is almost as if the sculptor, offered the previously denied opportunity of taking advantage of the observer's low horizon, now did so with relish. Curiously, while it is generally conceded that the Martyrdom was designed for such a low viewing point, no analysis or even photograph of the work from this angle has ever been published. Yet, obvious improvements in the relief's effect are apparent from ground level (fig. 64). For example, several distorted heads, such as those of the soldier in the doorway on the right and the figure directing the execution on the left, appear more normally proportioned through optical foreshortening. But ultimately it is the boldly conceived space itself that makes the greatest impression on the viewer and that confirms Donatello's intention to heighten the relief's illusionistic character. The deep "room" in which the Martyrdom is set is, in fact, an artificial affair. It is constructed from projecting side walls in the now familiar splayed perspective and covered by an unroofed, coffered ceiling. This ceiling, however, is both too low and too thin to be believable except as a horizontal screen, the main purpose of which, in the absence of a visible floor, is to give the space below it a measurable sense of perspective recession. But when this enclosed space is seen at eye-level (fig. 63), there is a discontinuity between its horizon and that of the observer, resulting in an incompatibility between the room's apparent depth and the undersized appearance of its inhabitants at the back wall. But when seen from below (fig. 64), the forced perspective of the quickly receding ceiling and side walls suggests a convincing recession that allows the furthermost figures to appear appropriately distant. Moreover, the entire relief is given an increased breadth and its figures move with greater independence in a more inhabitable space. The work's total visual impact is undeniable.

If the Martyrdom were not the only relief of the "Resurrection" pulpit to offer a *sotto in sù* perspective, its need of a low viewing position would have been long accepted. Moreover, while it is understandable that the low viewing position postulated here for all of the reliefs might seem inconsistent with the variance in their perspective construction, it should be remembered that the architectural setting of the Martyrdom was obviously designed to fit into the relief sequence of the pulpit regardless of the structure's planned placement or its position relative to the observer. Thus, the seeming inconsistency of the five panels would exist whether or not the optical corrections discussed here were intended by Donatello. But it should also be recalled that such an experimental approach, as already revealed in Donatello's willingness to combine spatially discordant effects within an otherwise unified scheme (the Old Sacristy pendentive tondi), is typical of the sculptor's creative intellect.[154]

* * * * * *

At the beginning of this study it was suggested that Donatello's use of optical corrections did not show a clearly defined, straightline development, something, I think, that has been borne out in the observations offered here. It is true that the visual adjustments of Donatello's earlier works were designed primarily for compositional and dramatic reasons, while those of his later productions seem to have been used for spatial and illusionistic ends. But such a generalization, although true, is misleading, since it places the effect before the cause. For the changes in the artist's use of optical corrections were not due to revised intentions or goals, but rather to considered responses to the particular sets of observational circumstances surrounding each commission. With the more frequent production of reliefs in Donatello's mature years, and his ever-increasing use of the newly-invented technique of linear perspective, he naturally evolved genres of optical corrections different from those seen, or even possible, in his youthful creations. We have also seen that these optical techniques were a mixture of the empirical and the mathematically calculated, the proportions of which depended on the given subject. Thus, Donatello's figures, both freestanding and in relief, reveal compositional and proportional adjustments that are the result of planning for predicted effects, but that (especially when the works were modeled rather than cut) were also developed in the course of formation to satisfy a demanding eye. The space-creating illusions of perspective were obviously more mathematically systematic and less adaptable to mid-work correction, but these too were subject to such changes because of the very nature of the system's adaptation to a plastic medium.

---

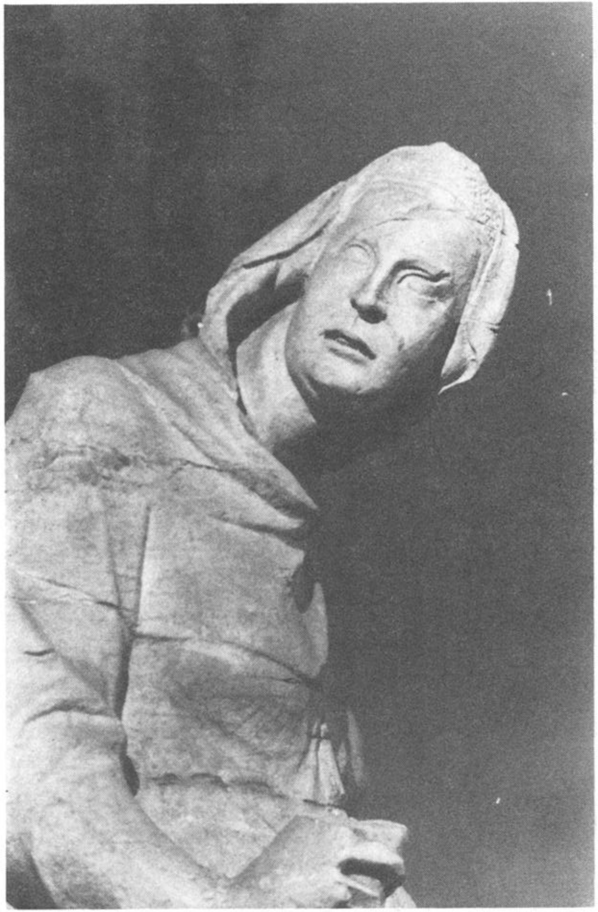
[154] The "Passion" pulpit's end relief representing Christ Before Pilate and Christ Before Caiaphas is the only one of the structure that seems to require a *sotto in sù* viewing position. However, such a position would be incorrect and, in fact, reveals no substantive optical adjustments. It is true that the scene's ground line is slightly tilted and that the stairs below Caiaphas and the pedestal of Pilate's chair are canted as well. From below these surfaces are still visible, and the truncated soldiers at the relief's front plane apparently stand on lower level rather than emerge strangely from solid ground. But a low viewing position for the relief is counteracted by its fairly normal horizon (most of the orthogonals cross in the upper torso of the soldier against the central column), and the extremely close distance point of its perspective. This produces the widely splayed wall also seen in the "Resurrection" pulpit's reliefs, but unlike those designs the double audience hall here is roofed and divided into two barrel vaults, thus strongly calling attention to the wide angle perspective. (The Martyrdom of St. Lawrence on the "Resurrection" pulpit has a covered space, but it is not divided in the center, it has less of a splayed effect due to a longer distance point, and it has a low vanishing point indicating a low viewing position). Ultimately, however, the reason that the audience scene (like all of the "Passion" pulpit's reliefs) is not spatially improved from a low viewing angle, is that its true depth of relief is relatively shallow and the actual distance between front and rear surfaces, especially architectural surfaces, is slight. Thus, like the Paduan altar reliefs (see above and note 127), the scene's perspective gives it more the appearance than the reality of recession. Closer to a painting than the more deeply modeled reliefs of the "Resurrection" pulpit, it is best read from an ideal point of view. These circumstances may be seen as support for Huse's theory of the "Passion" reliefs' original destination (see note 143).

But if the differing factors of sculptural medium, commission and site requirements, and the illusionistic and compositional possibilities (and limitations) of perspective underlay the variety of Donatello's visual adjustments, they also underlay the connections between them. For although the artist found individual solutions to the many problems of the observer's perception of the object, he was consistent in his attempts to fully realize the possibilities of each work to interact with its intended audience. Not content merely to display his sculpture, Donatello used all the artistic and technical means at his command to reinforce the object/observer relationship. Such a dependency has often been recognized in Donatello's work (and made even clearer by a number of Rosenauer's recent observations), but, I hope, has been brought into sharper focus through a deeper investigation of the specific optical techniques used to help effect that result. These techniques, moreover, should not be mistakenly considered mere mechanical devices that, while perhaps of interest, are ultimately of limited significance. Such a sentiment might be valid had Donatello lived a hundred years later, but in the early years of the Renaissance, such optical corrections are philosophically comparable to (if less far-reaching than) linear perspective itself. And just as perspective was a great deal more than a convenient trick to show spatial recession, so Donatello's optical adjustments were considerably more than a tool to achieve superficial *trompe l'oeil* effects. For in each instance in which the artist provided these corrections, they functioned to bring the work of art into a clearer, more legible and more intimate relationship with the viewer. It is, of course, a truism that, visually speaking, any work of art must be seen in its original physical context to be fully understood. But this is the case whether or not the artist made provision for the work's destination and conditions of observation. Moreover, where such adjustments are an integral part of the work's design, they can help to produce an interrelationship between viewer and object that is not otherwise possible. In some respects, it is as if the work exists in its totality only through that relationship, with the observer's perception completing the original image formed in the artist's mind.

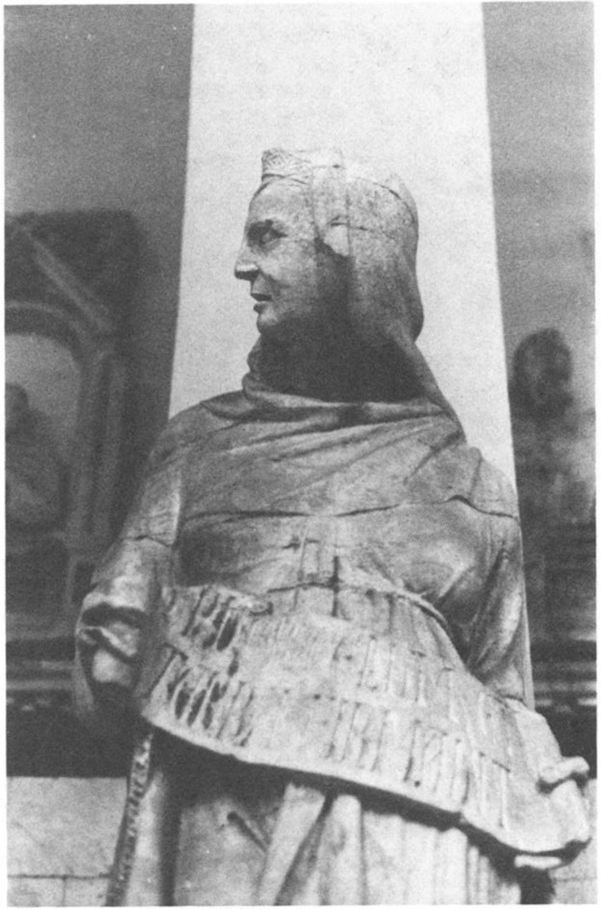
Donatello's accomplishment in his use of optical corrections should not be exaggerated: he was not the inventor of these devices (something, apparently, that should be credited to the classical Greeks), nor even the first post-classical artist to use them (from all appearances Giovanni Pisano must be given this honor). Nor was Donatello the artist who exploited optical corrective techniques most completely, since anamorphic distortions were not fully understood until the sixteenth century and not thoroughly developed until the seventeenth. But neither should Donatello's accomplishment be underestimated, for he has the distinction of being the first known artist to consciously apply these ideas over a long and productive career, and he did so without the benefit of the theoretical basis for such conceptions. The power of vision and invention that such an independent approach required is matched only by Donatello's success in calling minimum attention to the techniques themselves, preferring (in the words he may have known from Plato) to "put into the images . . . not the real proportions, but those that will appear beautiful . . . leaving the truth to take care of itself."

BIBLIOGRAPHY OF FREQUENTLY CITED SOURCES AND THEIR ABBREVIATIONS IN THE NOTES

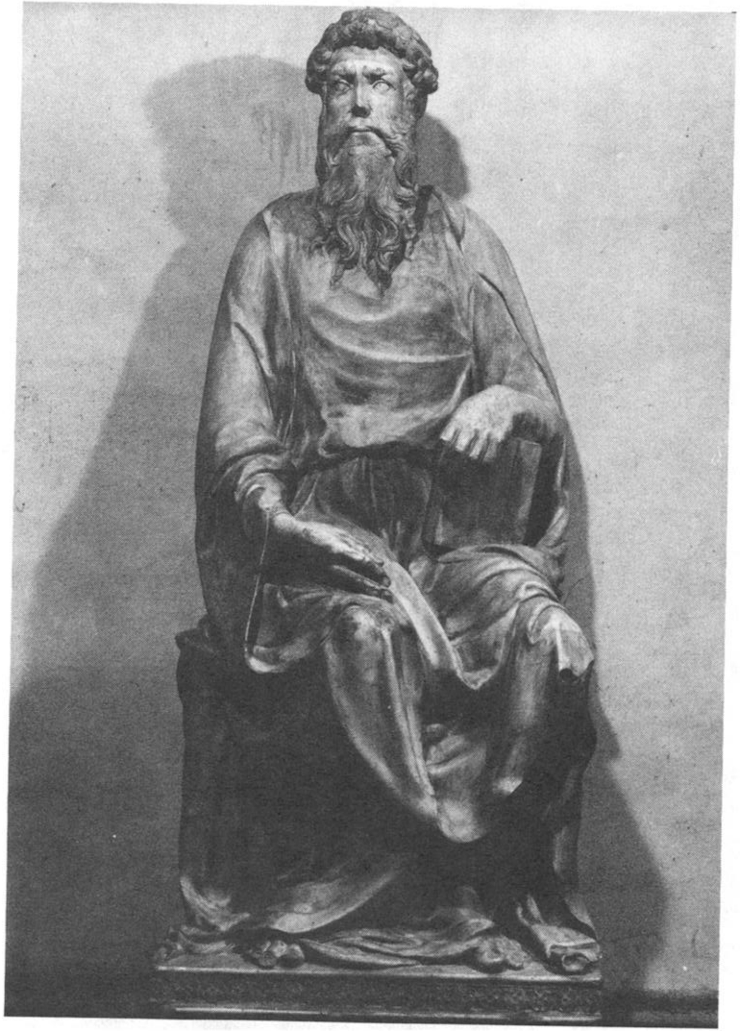
Becherucci, 1969	L. Becherucci and G. Brunetti, *Il Museo dell'Opera del Duomo a Firenze,* Florence, 1969
Carli, 1967	E. Carli, *Donatello a Siena,* Rome, 1967
Castelfranco, 1963	G. Castelfranco, *Donatello,* Milan, 1963
Dixon, 1976	J. W. Dixon, Jr., "Review of F. Hartt, *Donatello: Prophet of Modern Vision,*" in *Art Journal,* 36, 1: 76ff.
Hartt, 1969 (1979)	F. Hartt, *Italian Renaissance Art,* Englewood Cliffs, New Jersey/New York, 1969 (second ed., 1979)
Hartt, 1973	F. Hartt, *Donatello: Prophet of Modern Vision,* photographs by D. Finn, New York, 1973
Janson, 1957	H. W. Janson, *The Sculpture of Donatello,* Princeton, New Jersey, 1957 (second, one vol. ed., 1963)
Kauffmann, 1935	G. Kauffmann, *Donatello,* Berlin, 1935
Munman, 1980	R. Munman, "The Evangelists from the Cathedral of Florence: A Renaissance Arrangement Recovered," *Art Bulletin,* 62, 2 (1980): 207–17
Paoletti, 1967	J. T. Paoletti, "The Siena Baptistry Font: A Study of an Early Renaissance Collaborative Program, 1416–1434," PhD Diss., Yale University, 1967
Pope-Hennessy, 1971	J. Pope-Hennessy, *Italian Renaissance Sculpture,* London/New York, 1971
Pope-Hennessy, 1976 (1980)	J. Pope-Hennessy, "The Madonna Reliefs of Donatello," *Apollo,* 103, n. 169 (March), 1976, 172–91 (reprinted in *The Study and Criticism of Italian Sculpture,* Princeton, New Jersey, 1980, 71–105)
Seymour, 1966	C. Seymour, Jr., *Sculpture in Italy: 1400–1500,* Harmondsworth, 1966
Vasari-Milanesi	G. Vasari, *Le vite de' più eccellente pittori, scultori ed architettori . . . ,* II, Florence (1568), (1568), ed. G. Milanesi, Florence, 1878–85, repr. 1906
White, 1957	J. White, *The Birth and Rebirth of Pictorial Space,* London, 1957



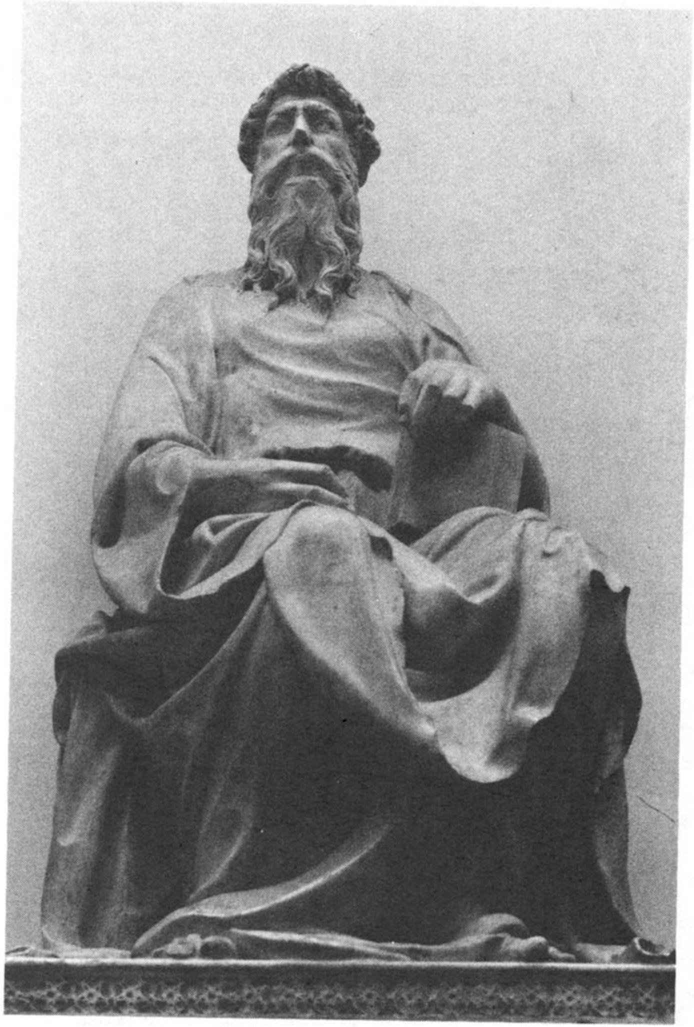
1. Giovanni Pisano, Miriam, Museo dell'Opera del Duomo, Siena (detail) (photo: author)



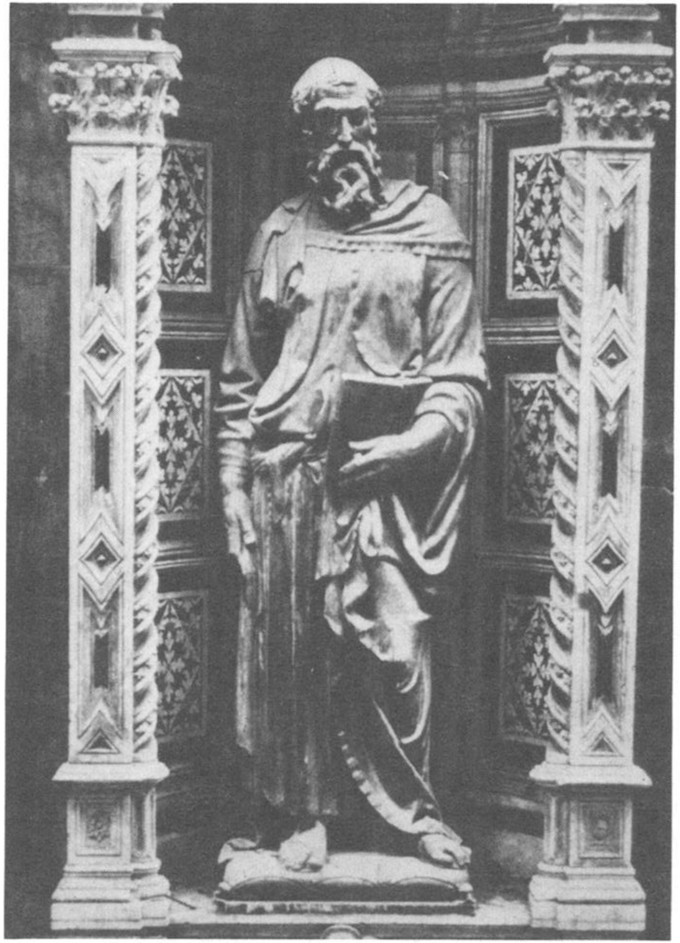
2. Giovanni Pisano, Miriam, Museo dell'Opera del Duomo, Siena (detail; view from below) (photo: author)



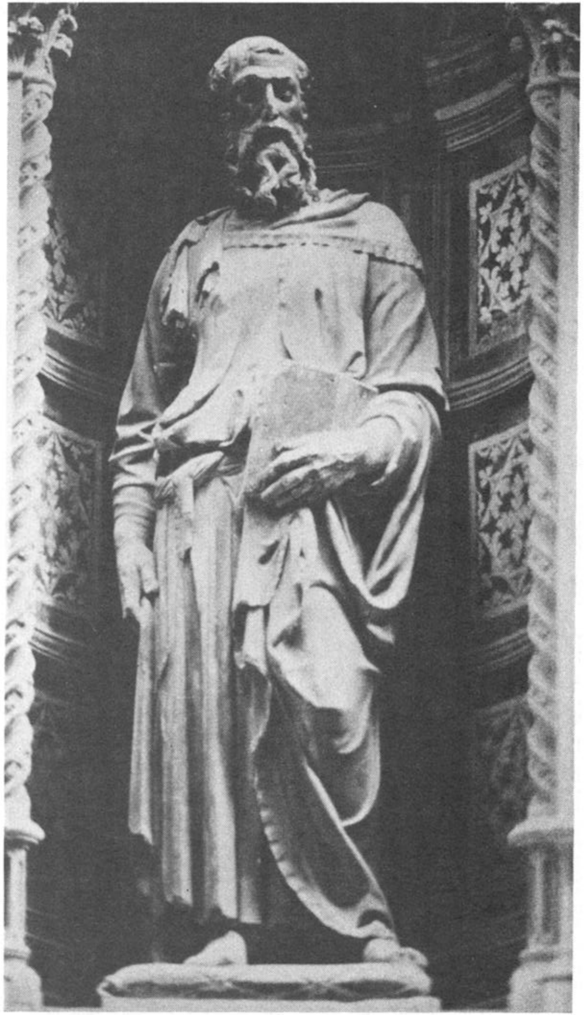
3. Donatello, St. John the Evangelist, Museo dell'Opera del Duomo, Florence (photo: Alinari)



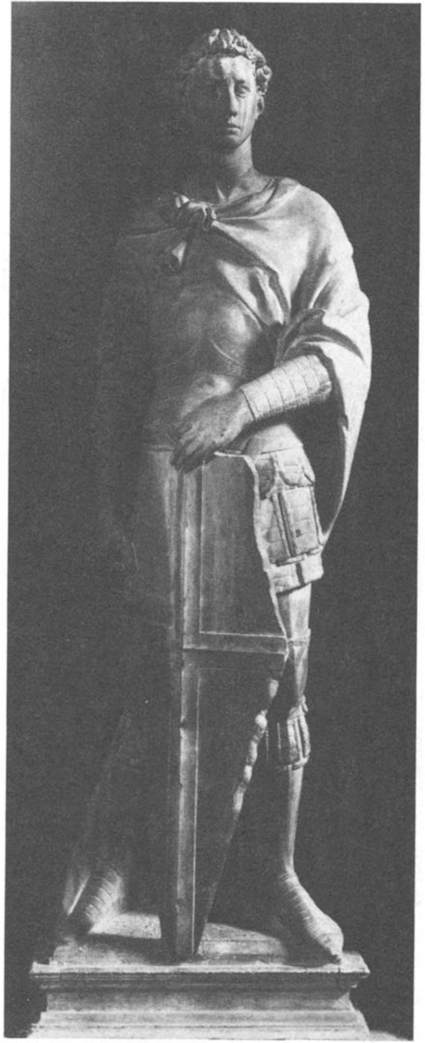
4. Donatello, St. John the Evangelist, Museo dell'Opera del Duomo, Florence (view from below) (photo: author)



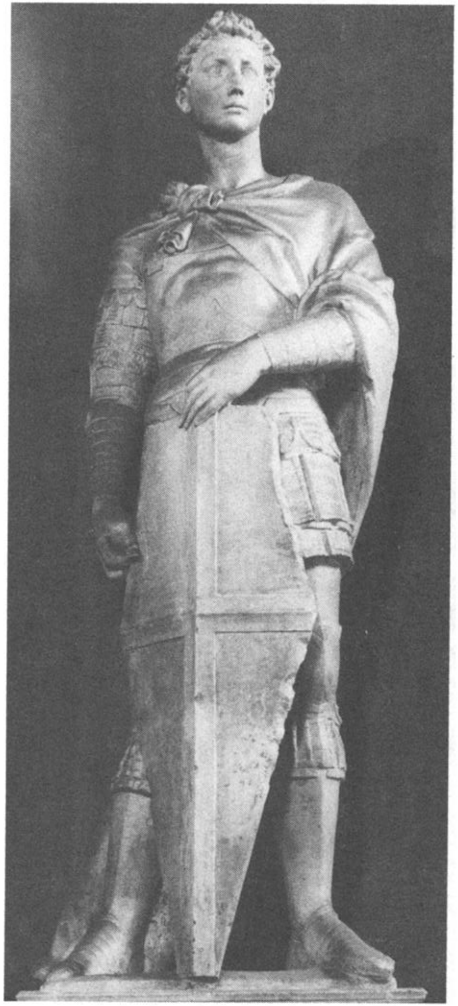
5. Donatello, St. Mark, Or San Michele, Florence (photo: origin unknown)



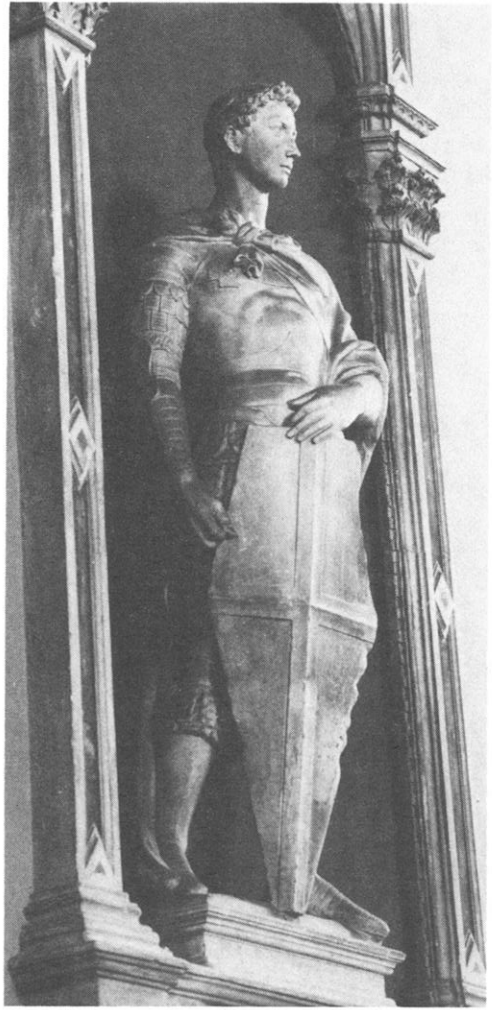
6. Donatello, St. Mark, Or San Michele, Florence (view from below) (photo: author)



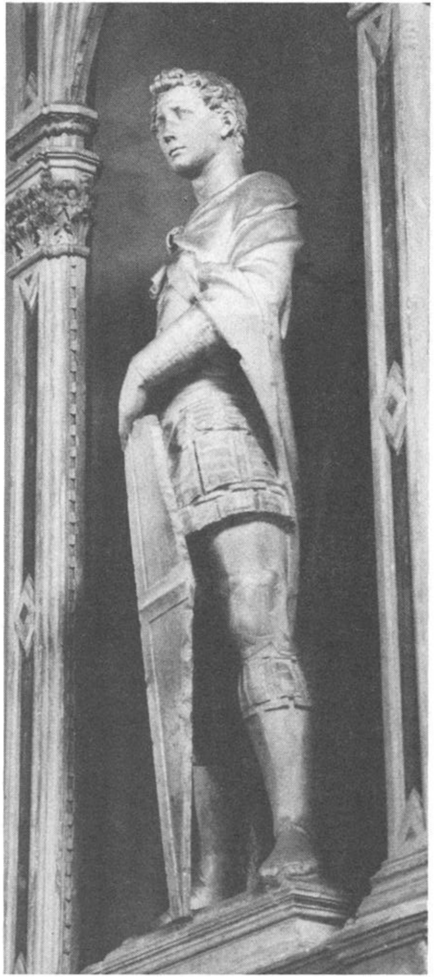
7. Donatello, St. George, Museo Nazionale, Florence (from Or San Michele) (photo: Alinari)



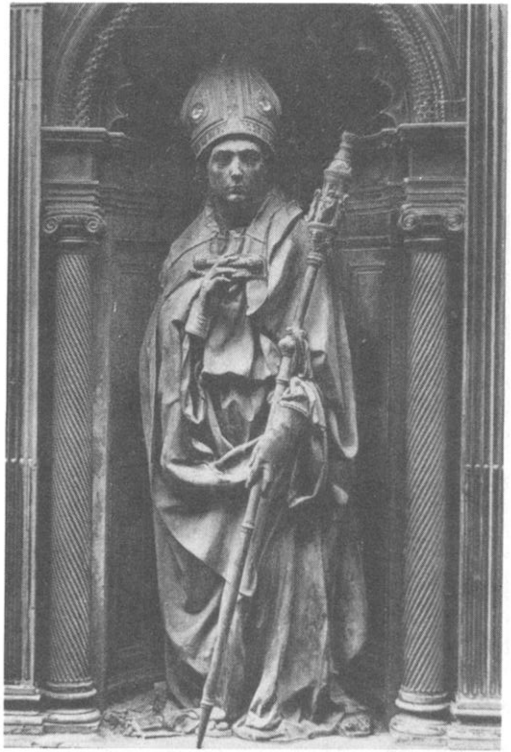
8. Donatello, St. George, Museo Nazionale, Florence (from Or San Michele) (view from below) (photo: author)



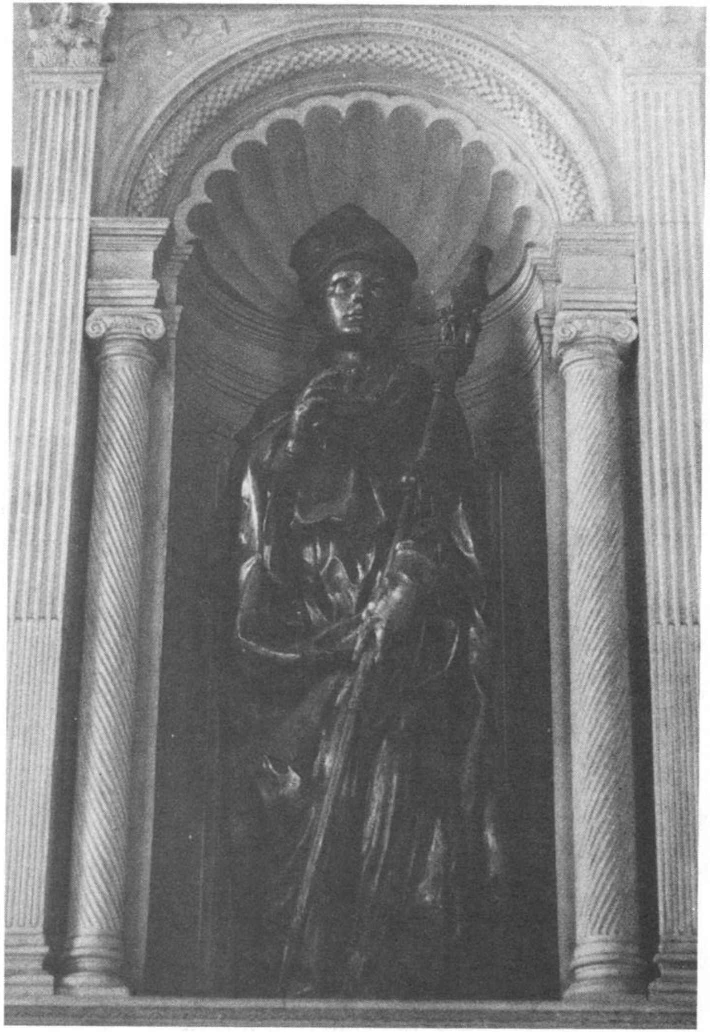
9. Donatello, St. George, Museo Nazionale, Florence (from Or San Michele) (view from below) (photo: author)



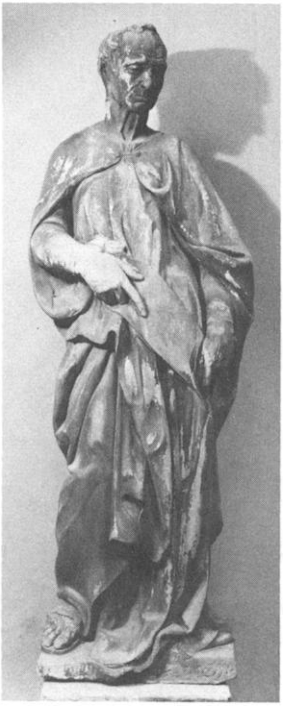
10. Donatello, St. George, Museo Nazionale, Florence (from Or San Michele) (view from below) (photo: author)



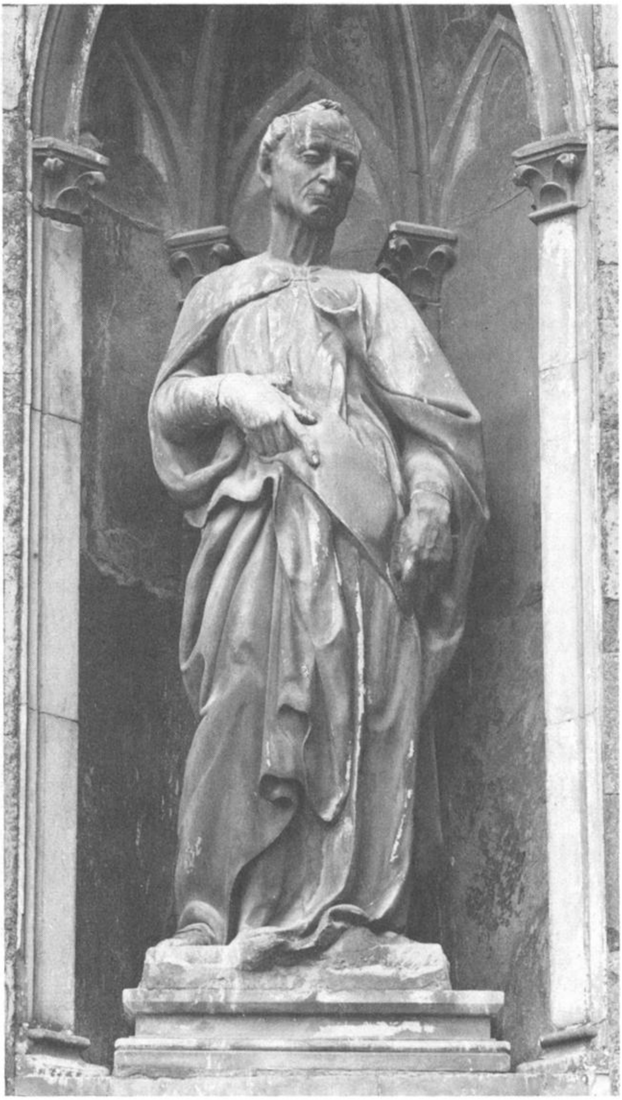
11. Donatello, St. Louis, Museum, S. Croce, Florence (from Or San Michele; shown in original niche) (photo: Gabinetto fotografico, Soprintendenza alle gallerie, Florence)



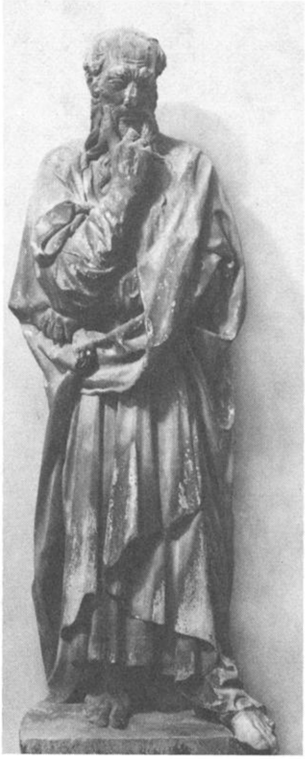
12. Donatello, St. Louis, Museum, S. Croce, Florence (from Or San Michele) (view from below) (photo: author)



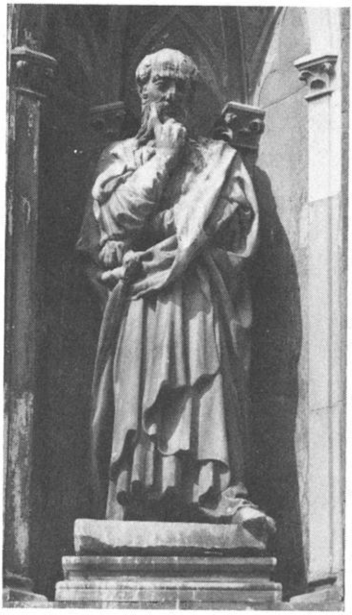
13. Donatello, "Beardless Prophet," Museo dell'Opera del Duomo, Florence (from the Campanile) (photo: Alinari)



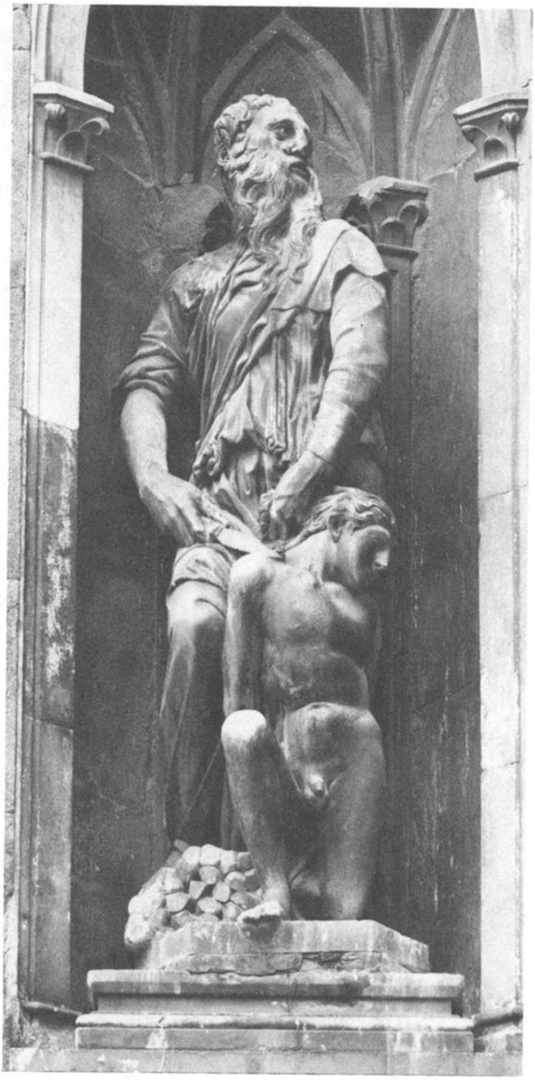
14. Donatello, "Beardless Prophet," Museo dell'Opera del Duomo, Florence (from the Campanile; shown in original niche) (view from below) (photo: Alinari)



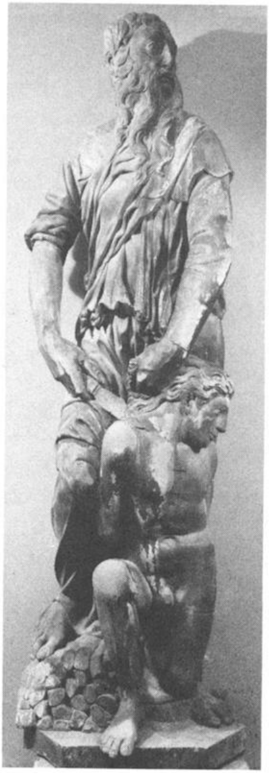
15. Donatello, "Bearded Prophet," Museo dell'Opera del Duomo, Florence (from the Campanile) (photo: Alinari)



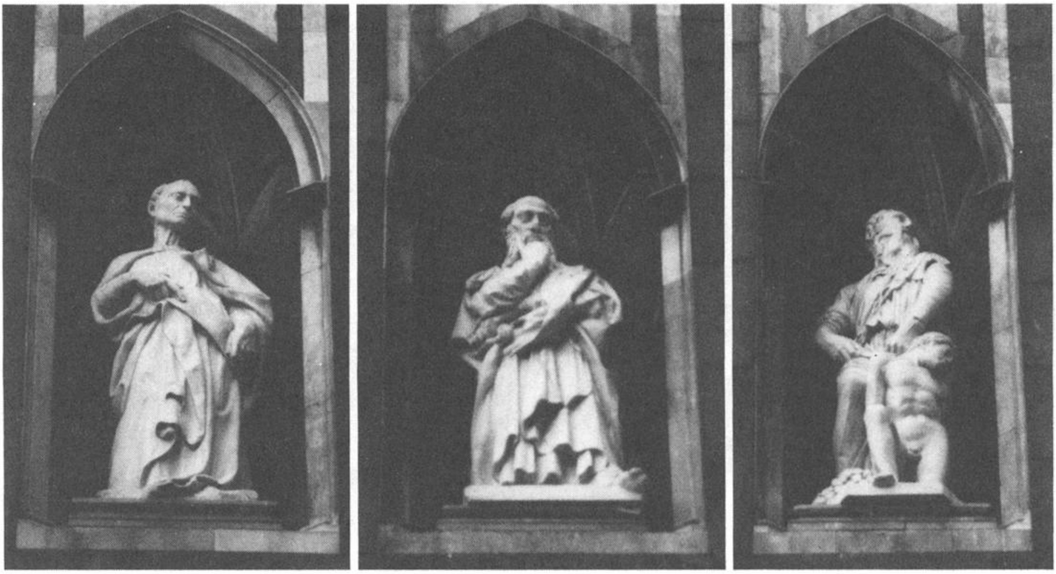
16. Donatello, "Bearded Prophet," Museo dell'Opera del Duomo, Florence (from the Campanile; shown in original niche) (view from below) (photo: Alinari)



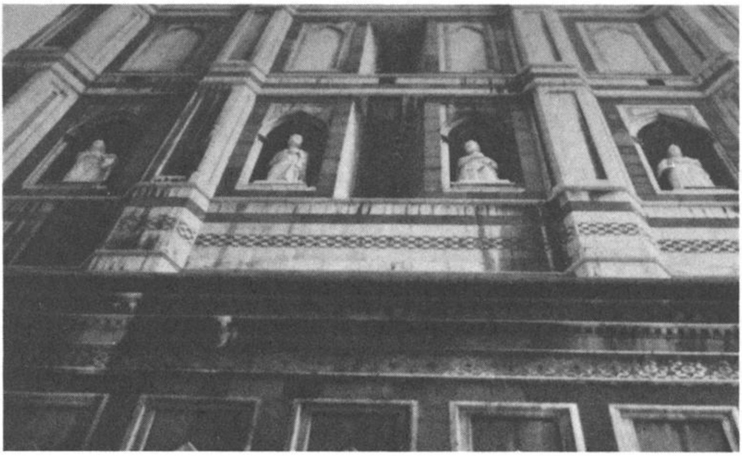
18. Donatello, Abraham and Isaac, Museo dell'Opera del Duomo, Florence (from the Campanile; shown in original niche) (view from below) (photo: Alinari)



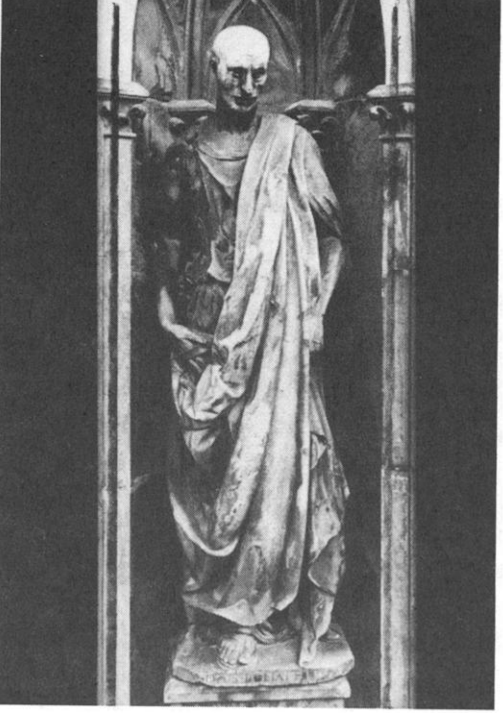
17. Donatello, Abraham and Isaac, Museo dell'Opera del Duomo, Florence (from the Campanile) (photo: Alinari)



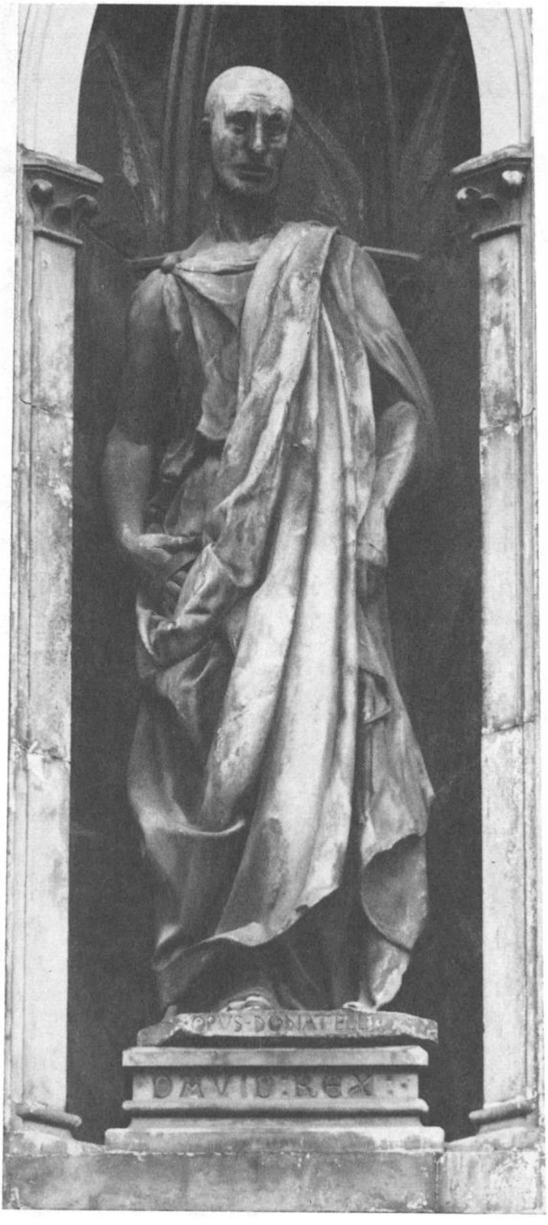
19a, b, c. Donatello, "Beardless Prophet," "Bearded Prophet," and Abraham and Isaac (modern copies), Campanile, Florence (overly close view from below) (photo: author)



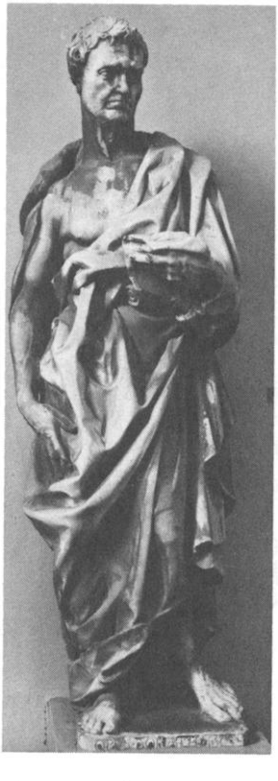
20. Niches on the north side of the Campanile, Florence (with modern copies after Andrea Pisano) (view from below) (photo: author)



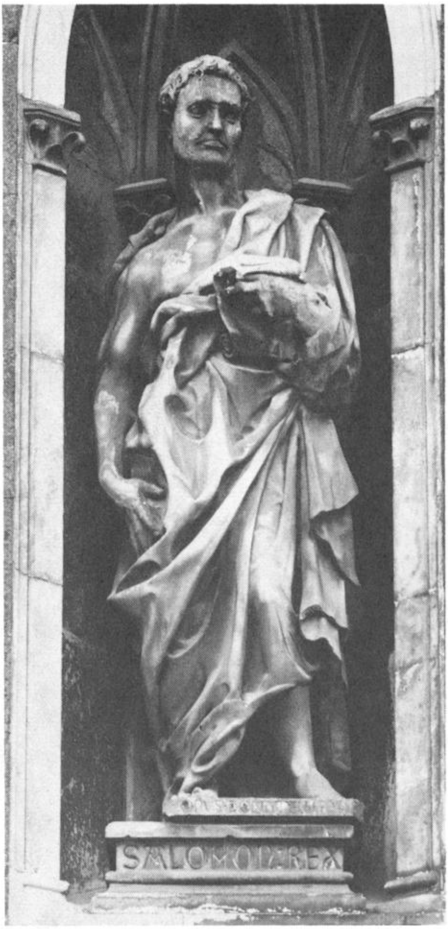
21. Donatello, "Lo Zuccone," Museo dell'Opera del Duomo, Florence (from the Campanile; shown in original niche) (photo: origin unknown)



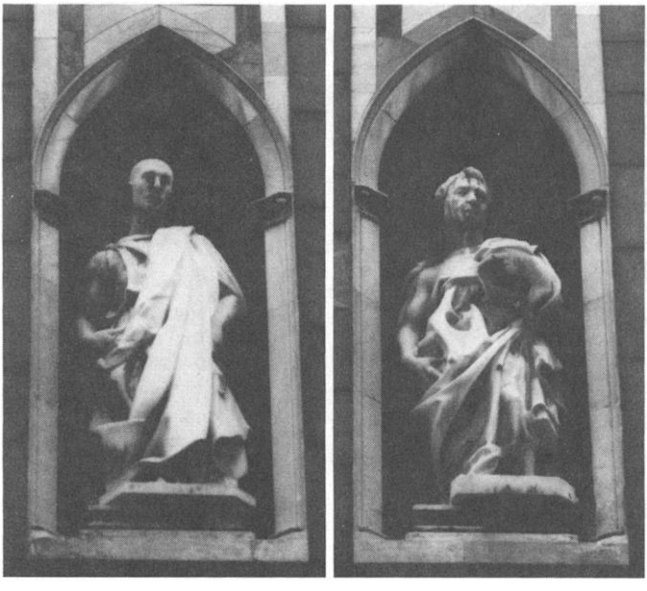
22. Donatello, "Lo Zuccone," Museo dell'Opera del Duomo, Florence (from the Campanile; shown in original niche) (view from below) (photo: Alinari)



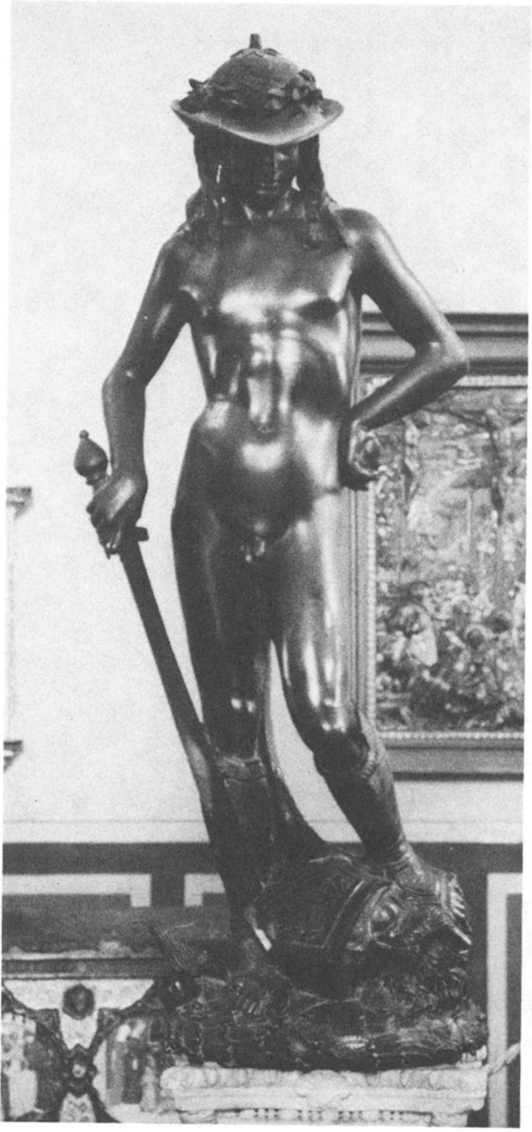
23. Donatello, "Jeremiah," Museo dell'Opera del Duomo, Florence (from the Campanile) (photo: Alinari)



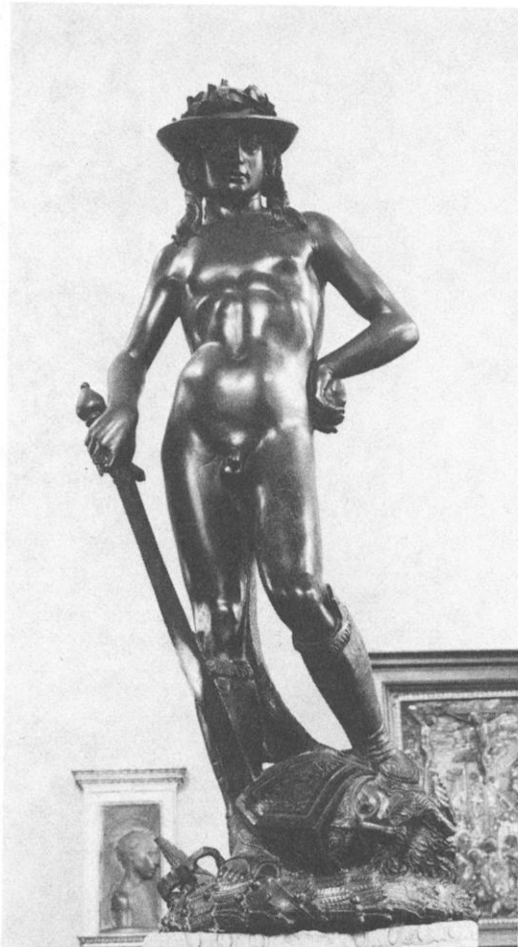
24. Donatello, "Jeremiah," Museo dell'Opera del Duomo, Florence (from the Campanile; shown in original niche) (view from below) (photo: Alinari)



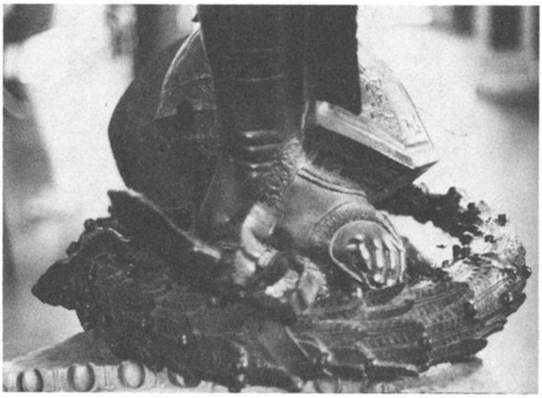
25a, b. Donatello, "Lo Zuccone," "Jeremiah," (modern copies), Campanile, Florence (overly close view from below) (photo: author)



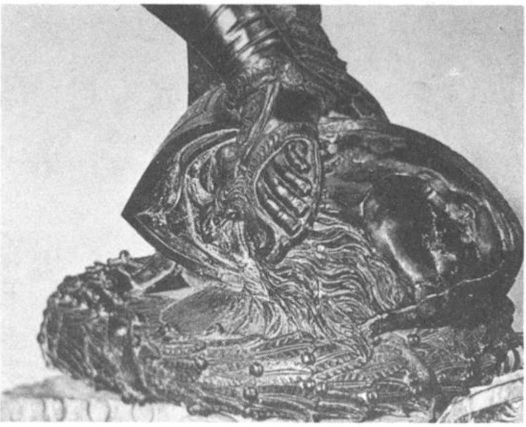
26. Donatello, David, Museo Nazionale, Florence (photo: author)



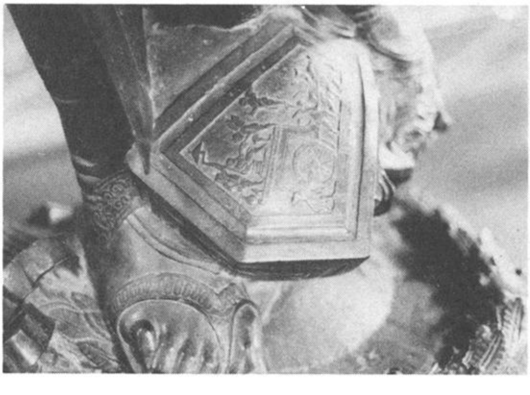
27. Donatello, David, Museo Nazionale, Florence (view from below) (photo: author)



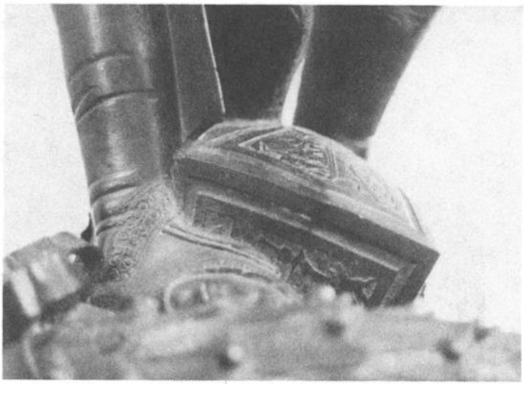
28. Donatello, David, Museo Nazionale, Florence (detail) (photo: author)



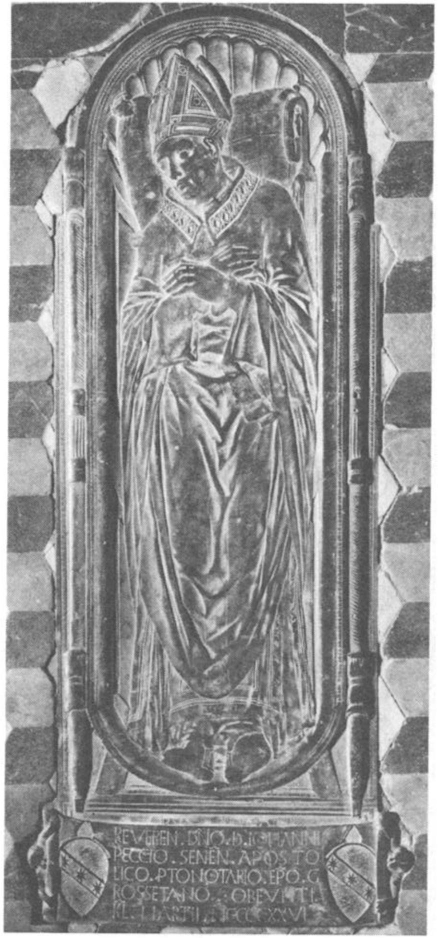
29. Donatello, David, Museo Nazionale, Florence (detail) (photo: Brogi)



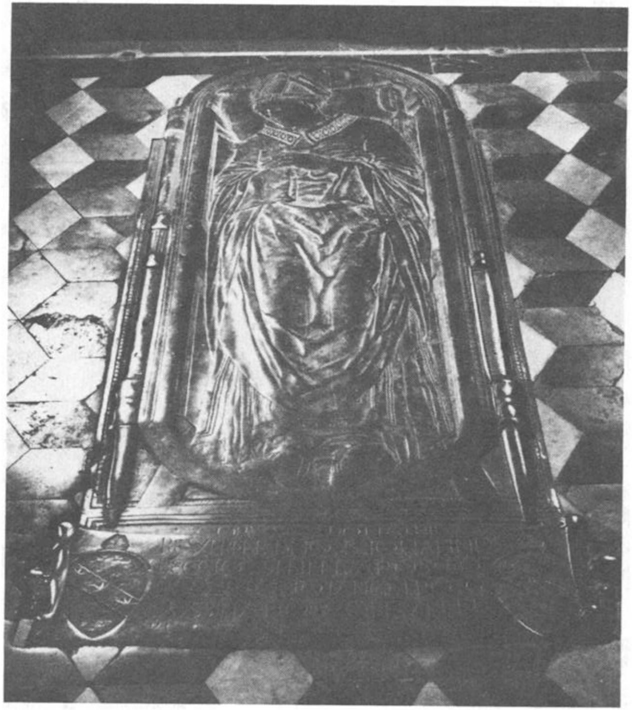
30. Donatello, David, Museo Nazionale, Florence (detail) (photo: author)



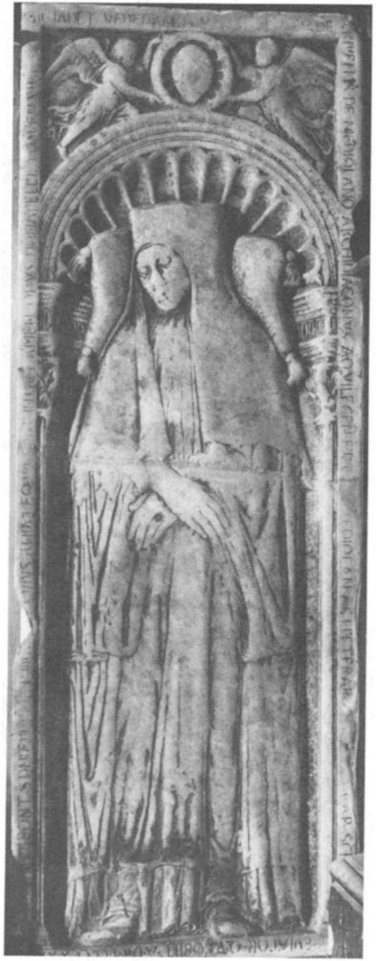
31. Donatello, David, Museo Nazionale, Florence (detail) (photo: author)



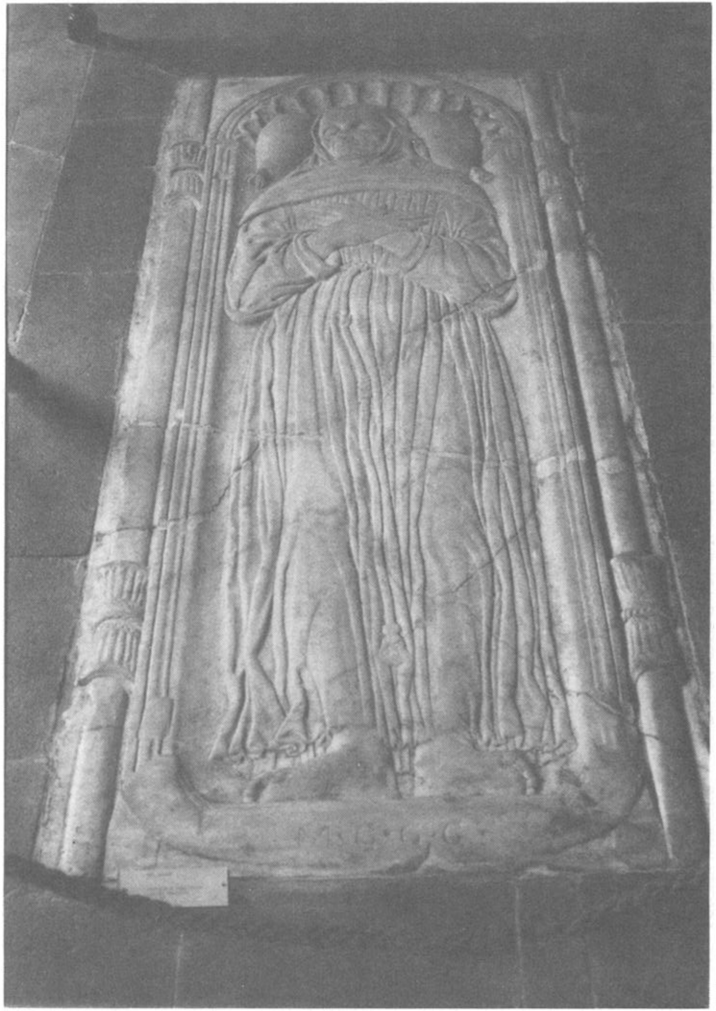
32. Donatello, Tomb Slab of Bishop Giovanni Pecci, Cathedral, Siena (photo: Alinari)



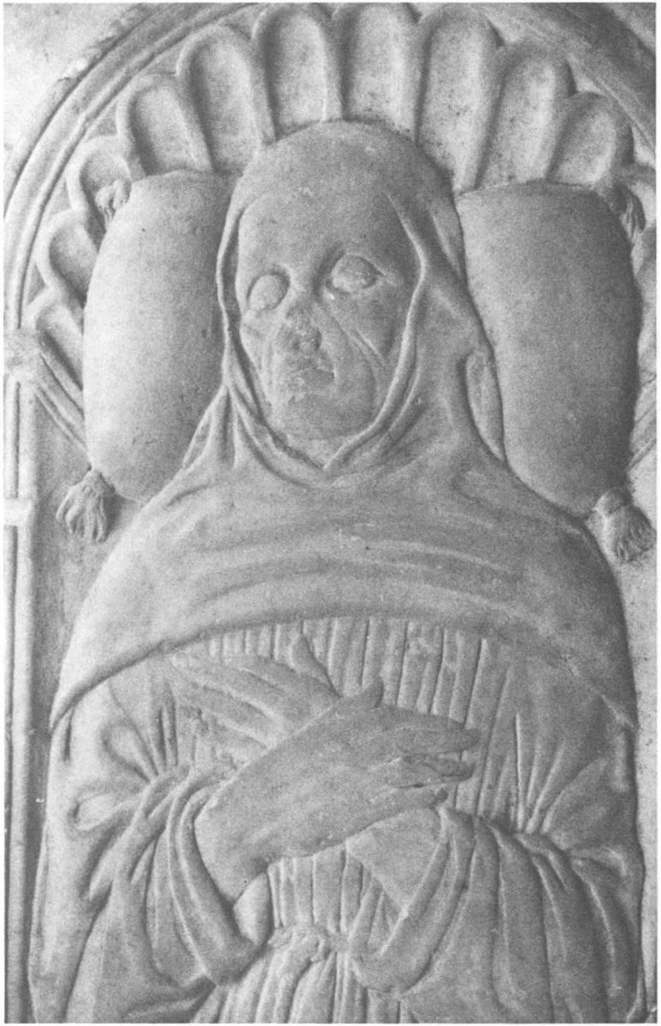
33. Donatello, Tomb Slab of Bishop Giovanni Pecci, Cathedral, Siena (view from foot) (photo: author)



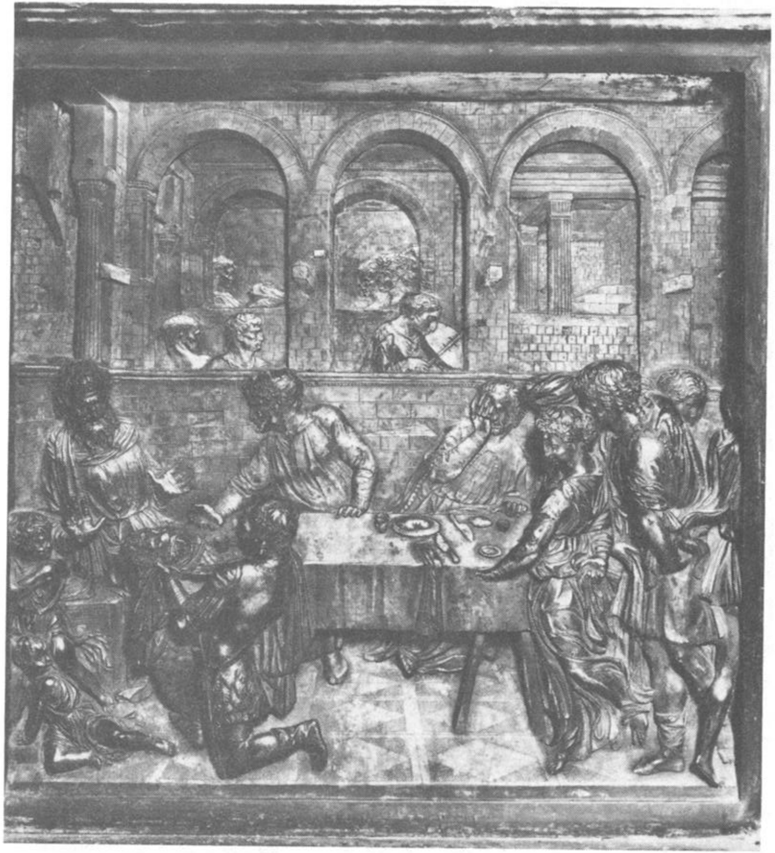
34. Donatello, Tomb Slab of Archdeacon Giovanni Crivelli, S. Maria in Aracoeli, Rome (photo: Alinari)



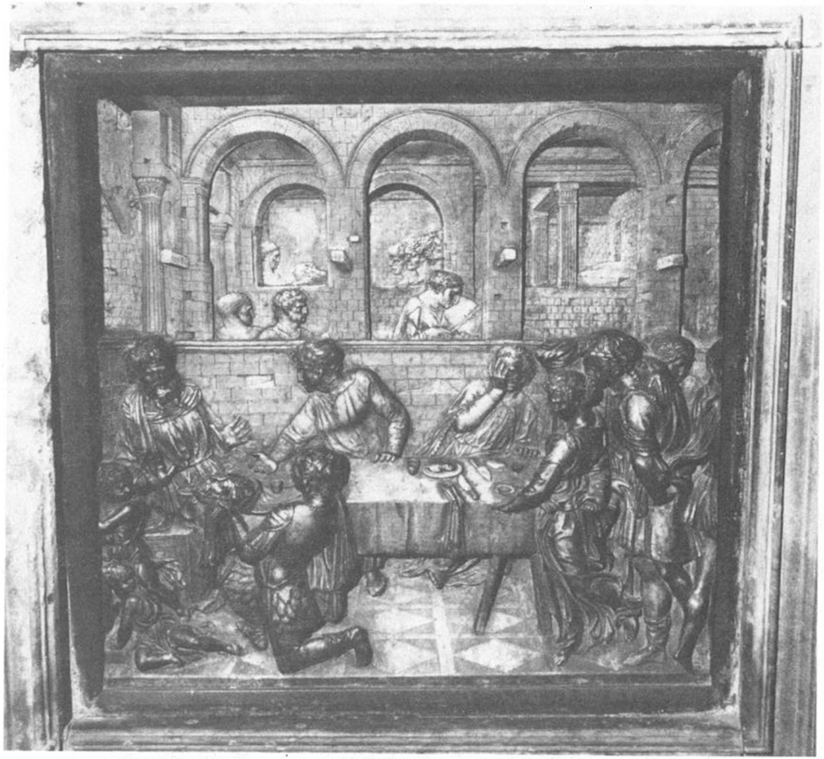
35. Tomb Slab of Unknown Friar, Museo Bardini, Florence (view from foot) (photo: author)



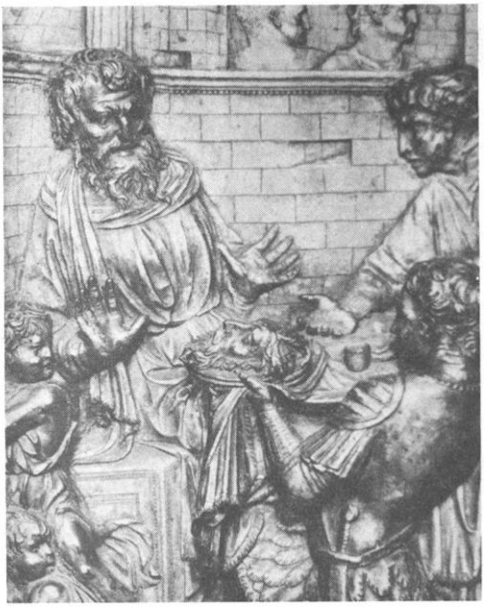
36. Tomb Slab of Unknown Friar, Museo Bardini, Florence (detail) (photo: author)



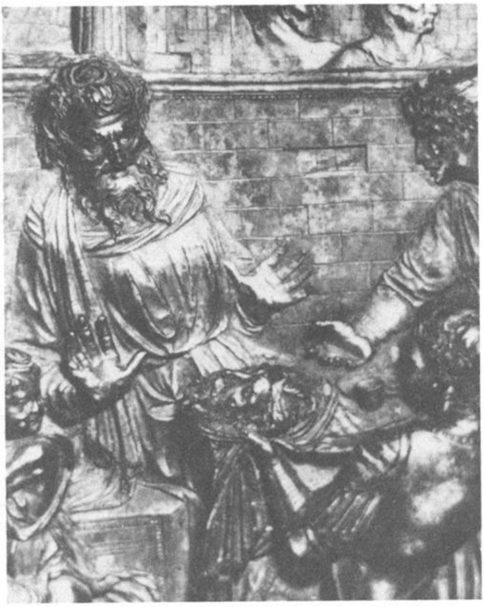
37. Donatello, The Feast of Herod, Baptistry, Siena (photo: Alinari)



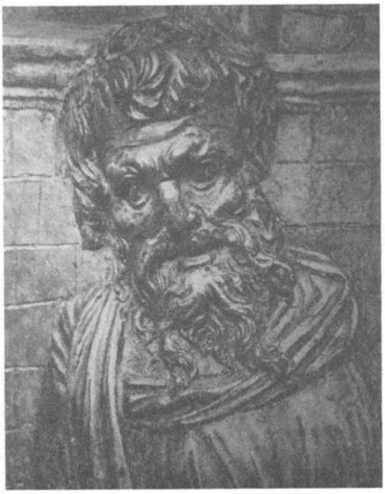
38. Donatello, The Feast of Herod, Baptistry, Siena (view from above) (photo: author)



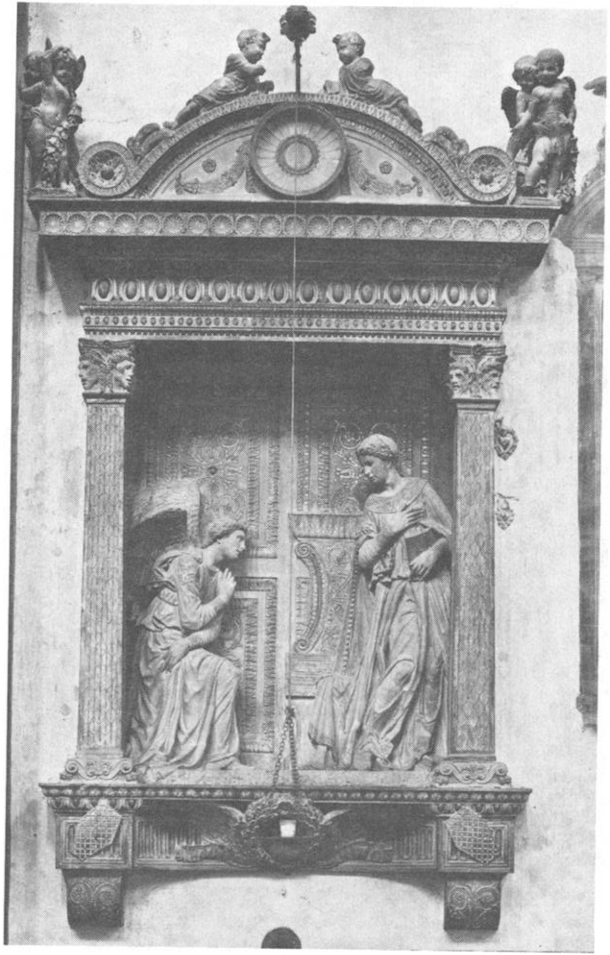
39. Donatello, The Feast of Herod, Baptistry, Siena (detail; direct frontal view) (photo: Alinari)



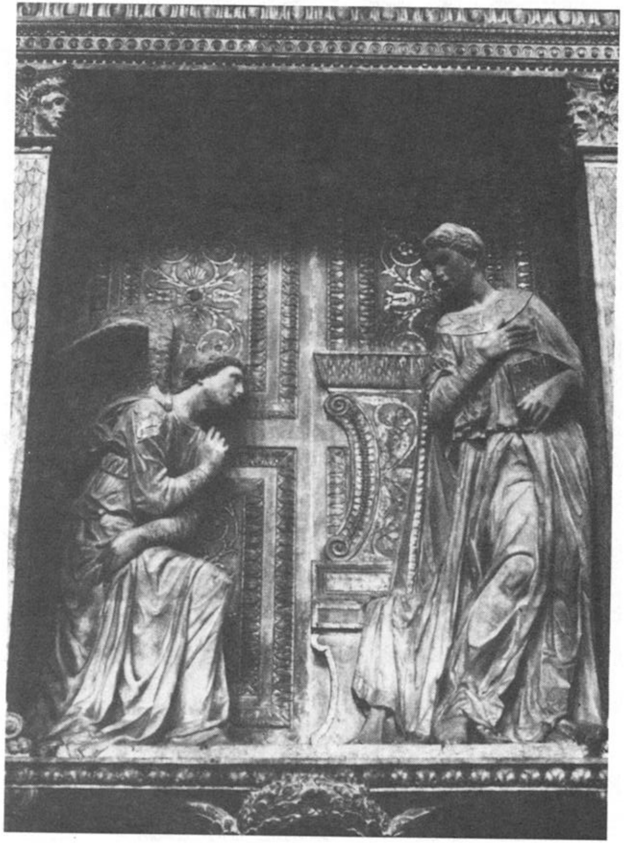
40. Donatello, The Feast of Herod, Baptistry, Siena (detail; view from slightly above) (photo: Alinari)



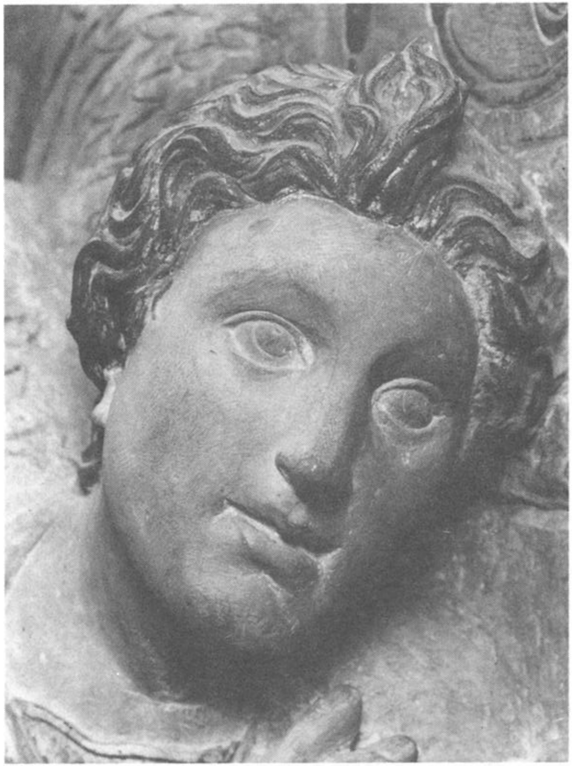
41. Donatello, The Feast of Herod, Baptistry, Siena (detail; head-on view of Herod's face) (photo: Grassi)



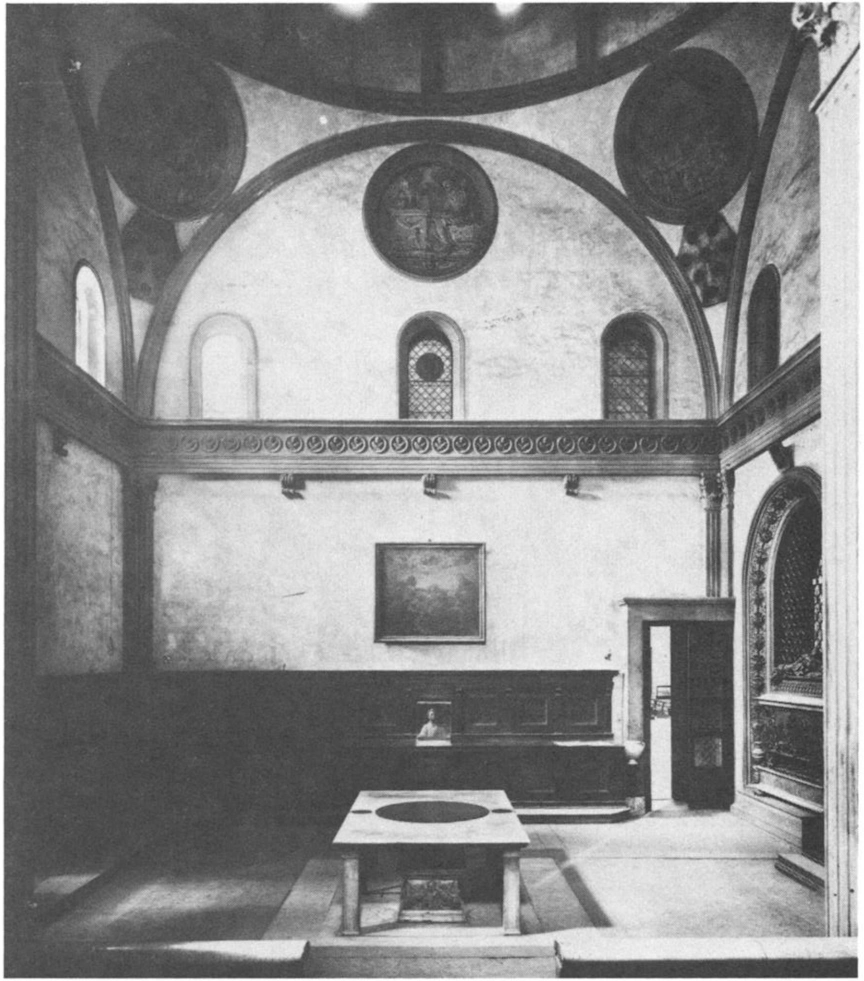
42. Donatello, The Cavalcanti Annunciation, S. Croce, Florence (photo: Alinari)



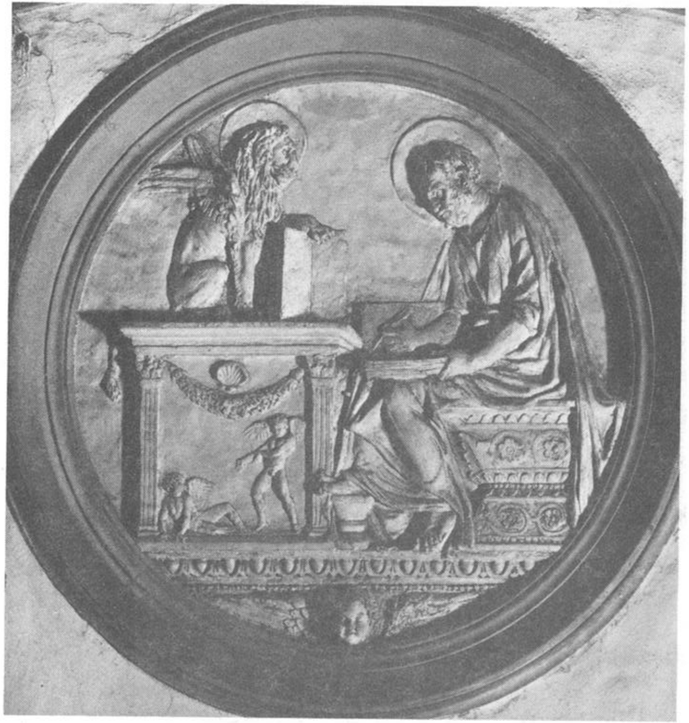
43. Donatello, The Cavalcanti Annunciation, S. Croce, Florence (detail; view from below) (photo: author)



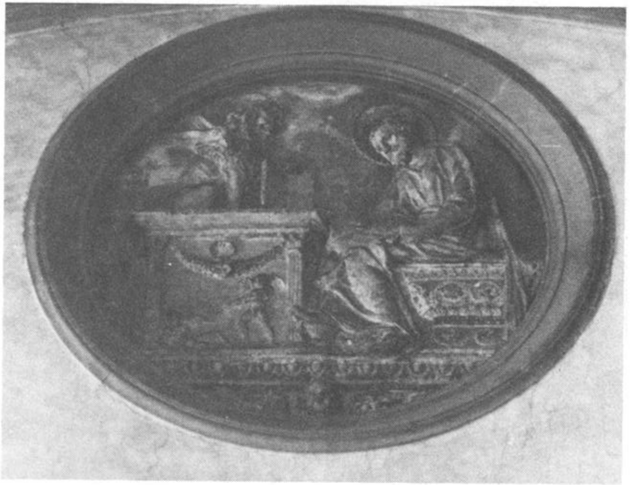
44. Donatello, The Cavalcanti Annunciation, S. Croce, Florence (detail; head-on view of Gabriel's face) (photo: Alinari)



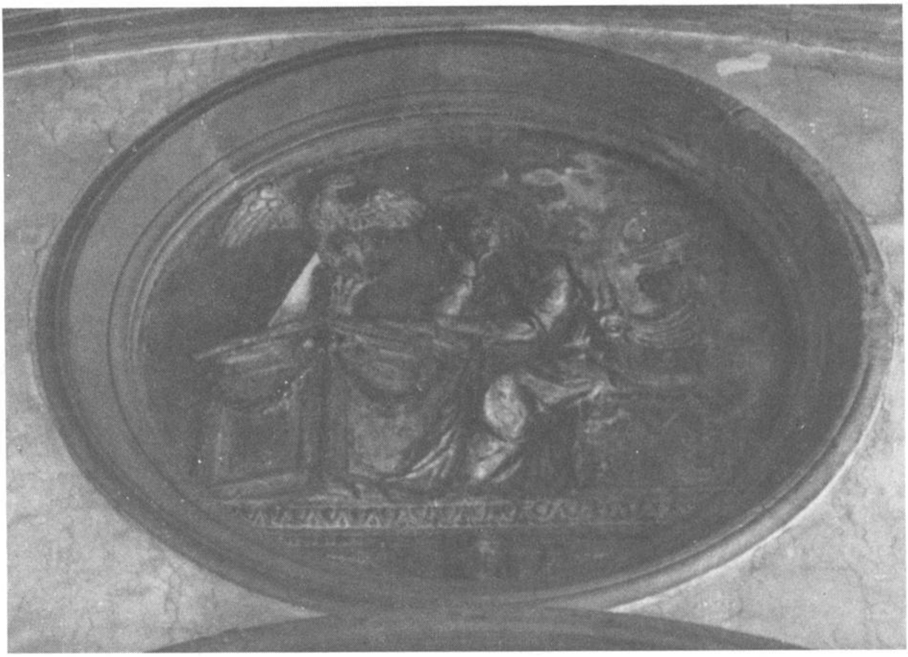
45. Donatello, Wall and Pendentive Tondi Reliefs, Old Sacristy, S. Lorenzo, Florence (photo: Alinari)



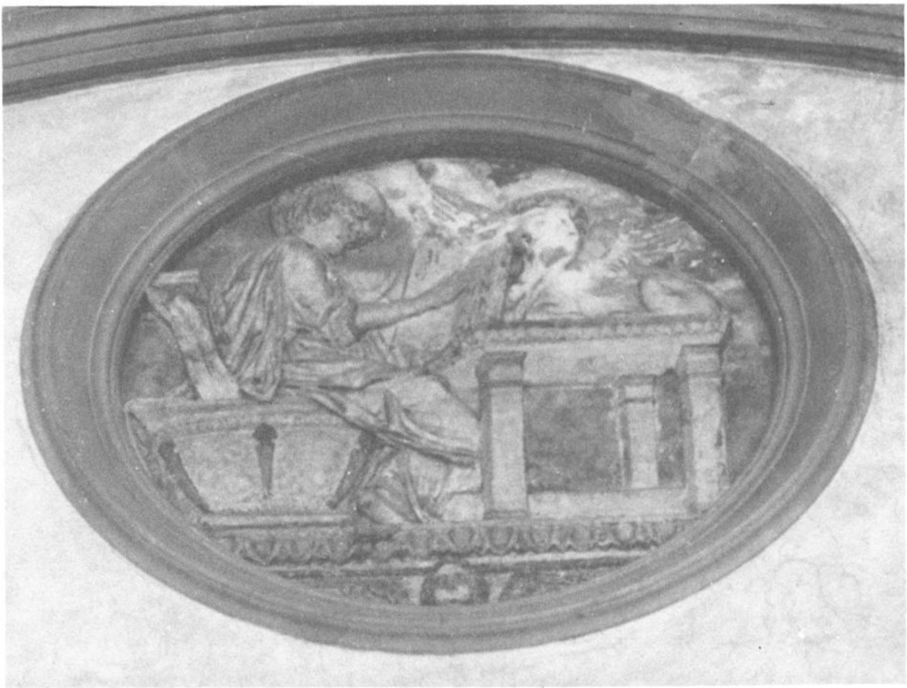
46. Donatello, St. Mark, Old Sacristy, S. Lorenzo, Florence (photo: Brogi)



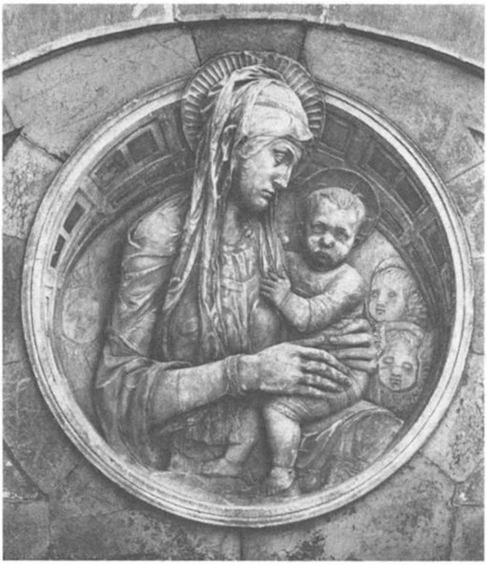
47. Donatello, St. Mark, Old Sacristy, S. Lorenzo, Florence (view from below) (photo: author)



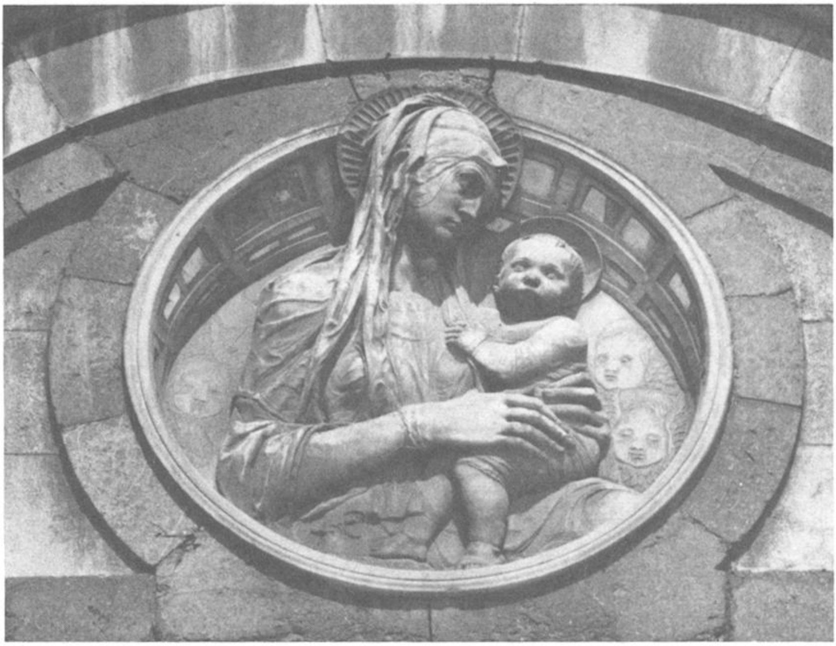
48. Donatello, St. John, Old Sacristy, S. Lorenzo, Florence (view from below) (photo: author)



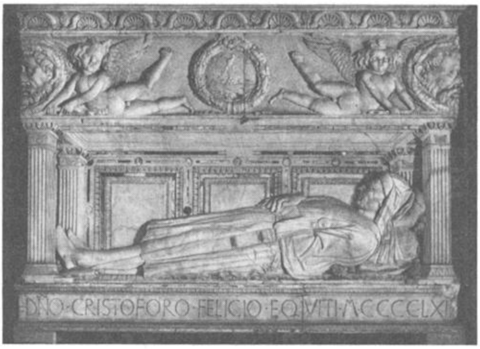
49. Donatello, St. Luke, Old Sacristy, S. Lorenzo, Florence (view from below) (photo: author)



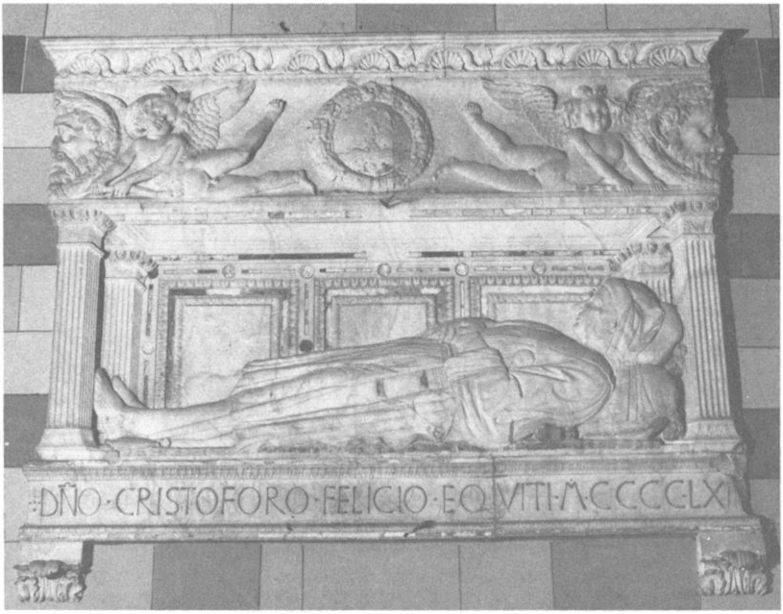
50. Donatello and shop, Madonna and Child with Angels (The "Madonna del Perdono"), Cathedral, Siena (photo: Alinari)



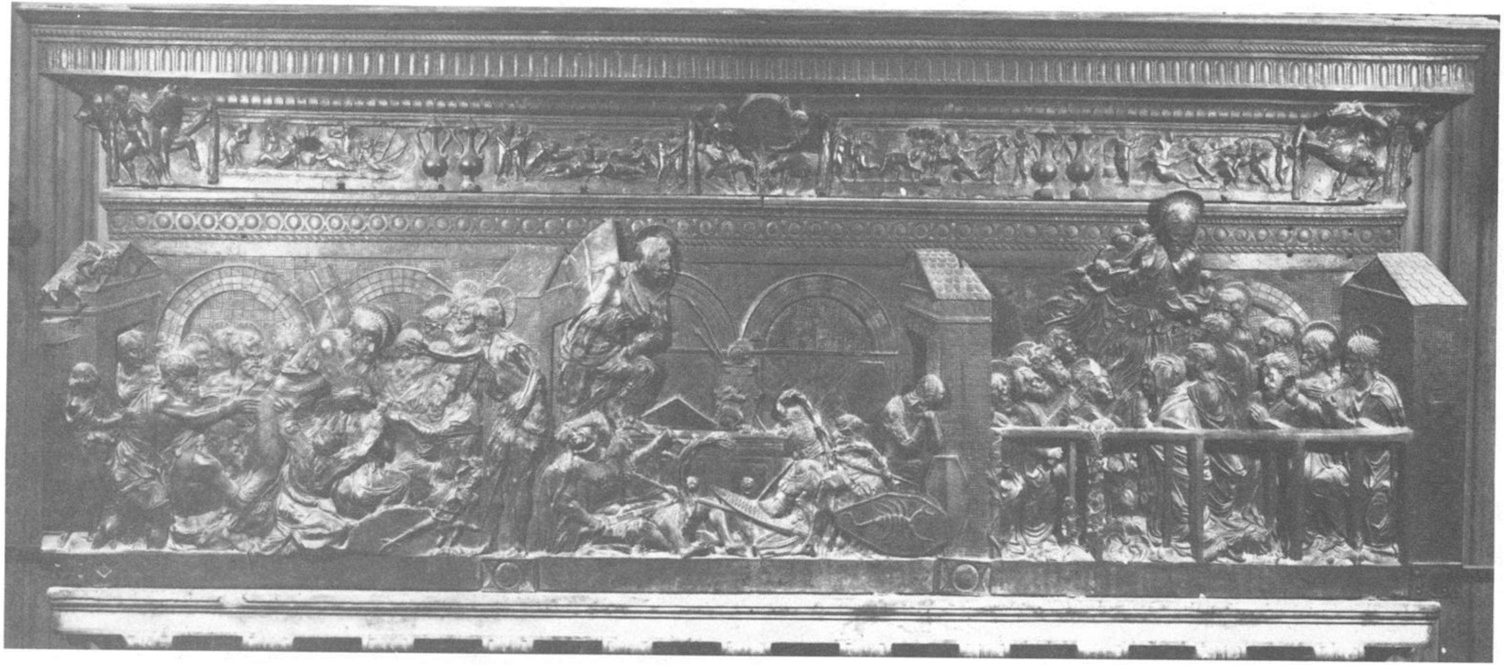
51. Donatello and shop, Madonna and Child with Angels (The "Madonna del Perdono"), Cathedral, Siena (view from below) (photo: author)



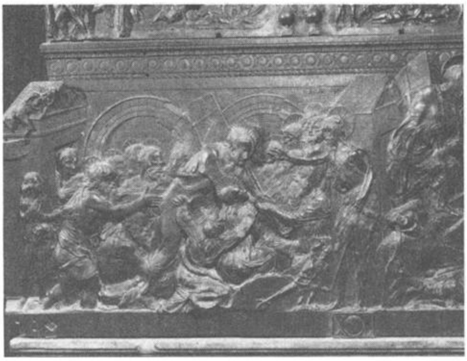
52. Urbano da Cortona, Memorial to Cristoforo Felici, S. Francesco, Siena (photo: Alinari)



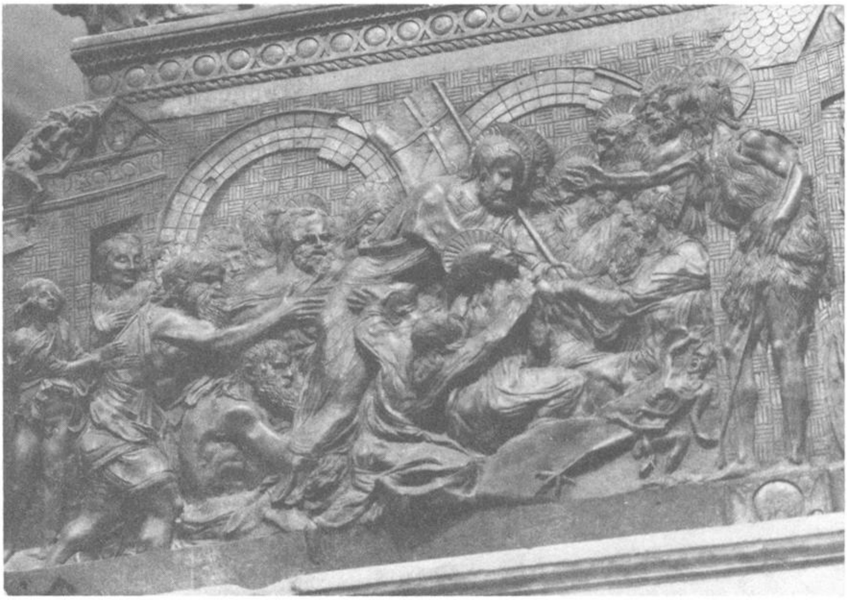
53. Urbano da Cortona, Memorial to Cristoforo Felici, S. Francesco, Siena (view from below) (photo: author)



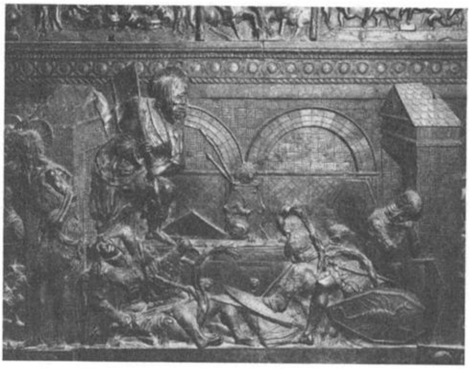
54. Donatello, The "Resurrection" Pulpit, S. Lorenzo, Florence (front face) (photo: Alinari)



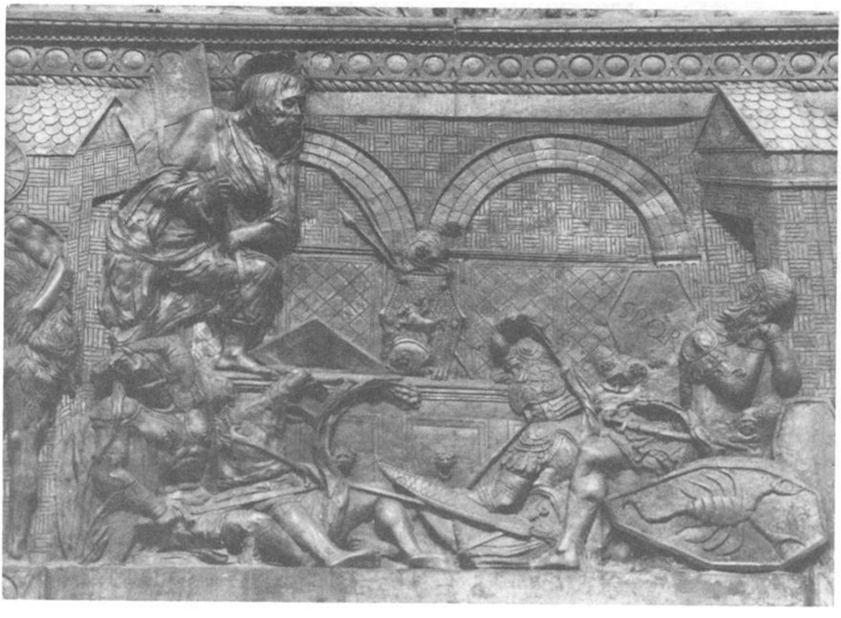
55. Donatello, Descent into Limbo (detail of fig. 54) (photo: Alinari)



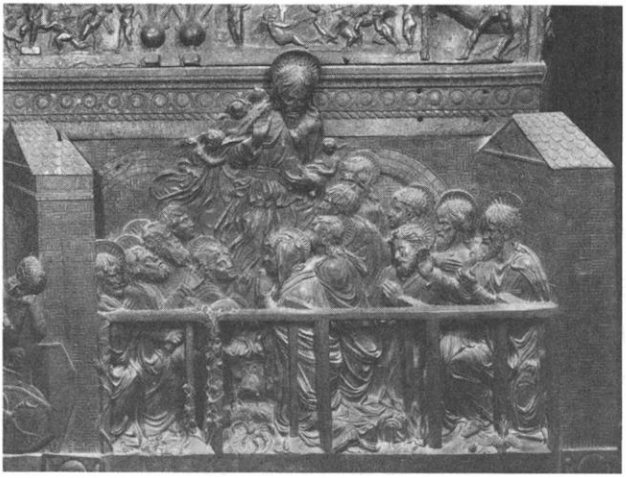
56. Donatello, Descent into Limbo (detail of fig. 54) (view from below and from the right) (photo: author)



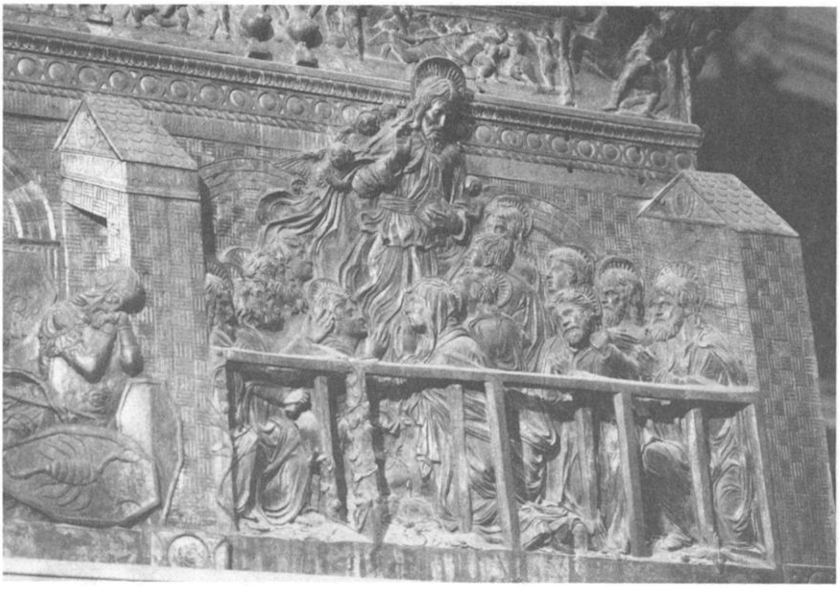
57. Donatello, The Resurrection (detail of fig. 54)
(photo: Alinari)



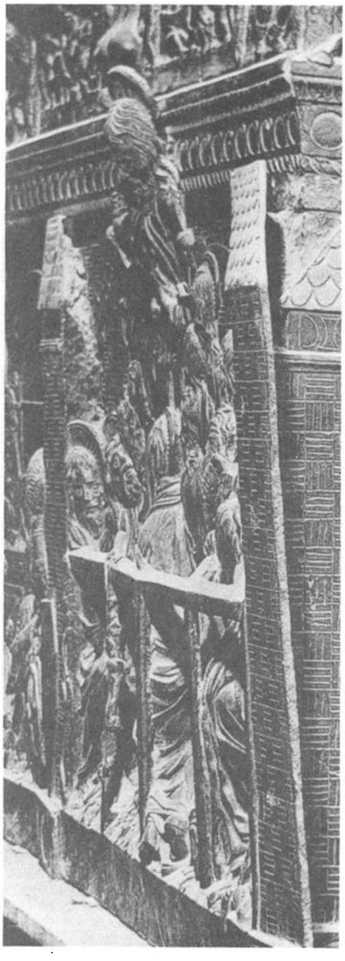
58. Donatello, The Resurrection (detail of fig. 54) (view from below) (photo: author)



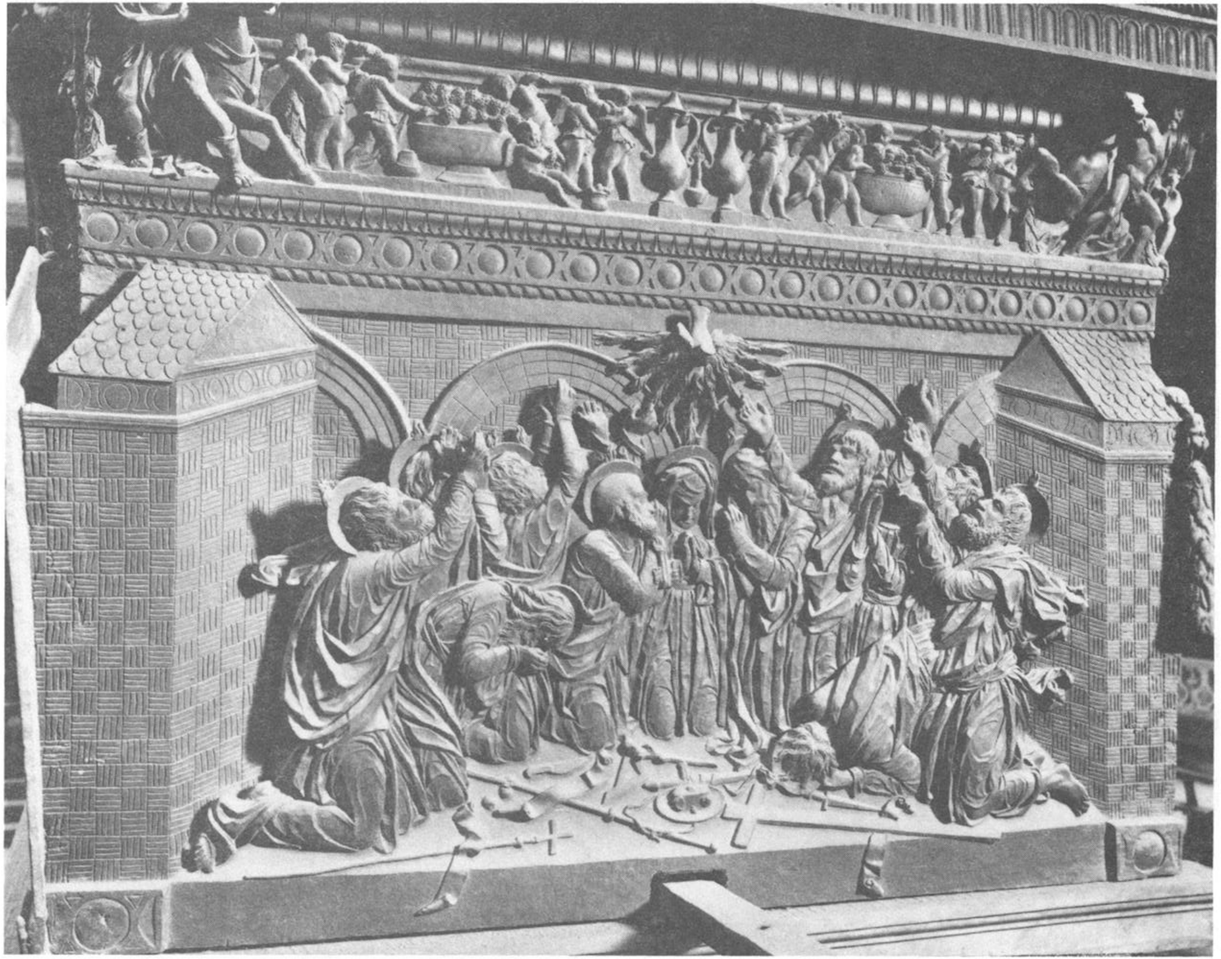
59. Donatello, The Ascension (Christ's Appearance to the Apostles) (detail of fig. 54) (photo: Alinari)



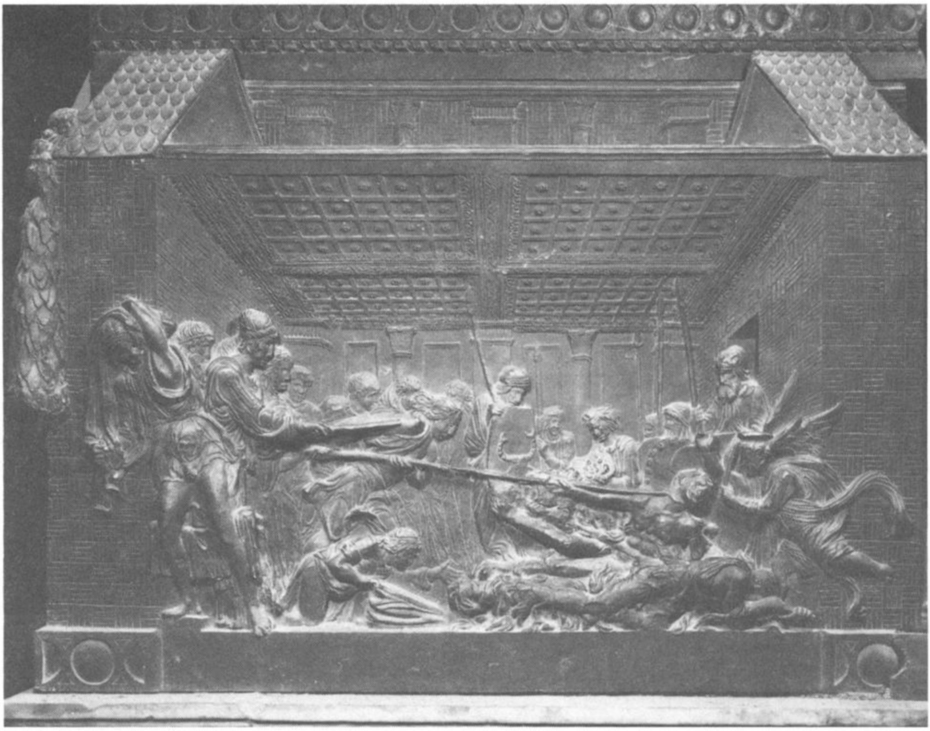
60. Donatello, The Ascension (Christ's Appearance to the Apostles) (detail of fig. 54) (view from below and from the left) (photo: author)



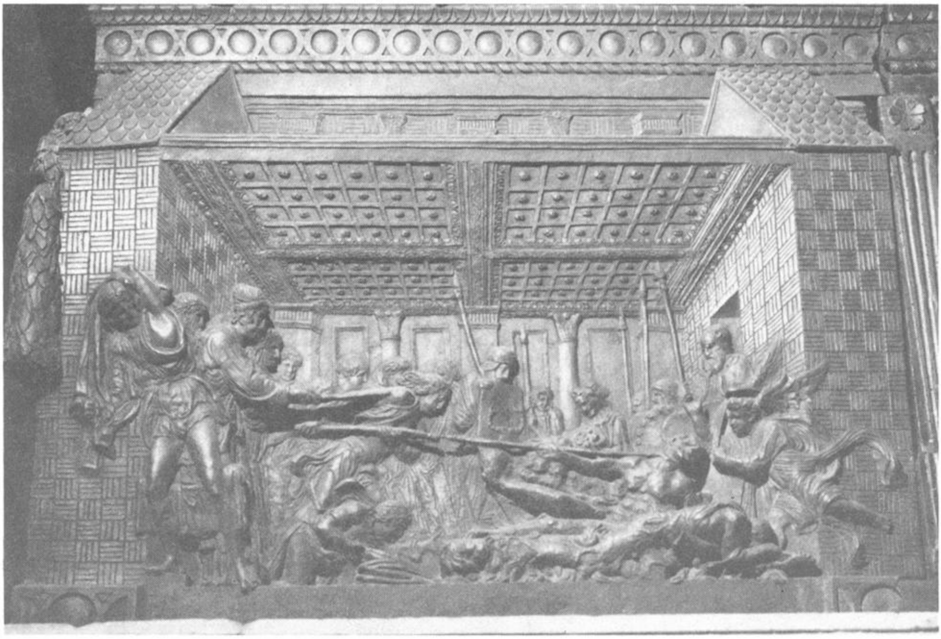
61. Donatello, The Ascension (Christ's Appearance to the Apostles) (detail of fig. 54) (sharply oblique view from the right) (photo: Brogi, after Janson)



62. Donatello and shop, Pentecost, from the ''Resurrection'' Pulpit, S. Lorenzo, Florence (photo: Alinari)



63. Donatello, The Martyrdom of St. Lawrence, from the "Resurrection" Pulpit, S. Lorenzo, Florence (photo: Alinari)



64. Donatello, The Martyrdom of St. Lawrence, from the "Resurrection" Pulpit, S. Lorenzo, Florence (view from below) (photo: author)

INDEX

Abraham and Isaac, by Donatello, Florence, Museo dell'Opera del Duomo, 19, 19 n.62, 21
Alberti, Leonbattista, 3 n.13, 35, 37f., 37 n.102
"Albertian window," 37, 37 nn.102 and 103, 40, 40 n.109
Alhazen, 41 n.111
Ambassadors, The, by Hans Holbein the younger, London, National Gallery, 2, 5
Anamorphosis, definition of, 2f.
Annunciation, by Donatello, Florence, S. Croce: see Cavalcanti Annunciation
Annunciation, by Fra Filippo Lippi, Florence, S. Lorenzo, 38 n.103
Apostle, by Jacopo della Quercia, Lucca, Cathedral, 16 n.50
"Appropriate distance," 12–14
Arnolfo di Cambio, 1 n.7
Ascension (Christ's Appearance to the Apostles), by Donatello, Florence, S. Lorenzo, 51–54
Ascension of Christ and Delivery of the Keys, by Donatello, London, Victoria & Albert Museum, 47 n.128
Assumption of St. John the Evangelist, by Donatello, Florence, Old Sacristy, S. Lorenzo, 9 n.29, 46 n.126
"Atys-Amorino," by Donatello, Florence, Museo Nazionale, 8, 28 n.79
Augsburg, Cathedral, Tomb of Wolfhart von Roth (Masters Otto and Konrad), 5f., 5 n.19, 6 n.20

Bacon, Roger, 41 n.111
Baroncelli, Niccolò, 29
Bearded Prophet, by Donatello, Florence, Museo dell'Opera del Duomo, 19f., 19 n.62, 21, 23
Beardless Prophet, by Donatello, Florence, Museo dell'Opera del Duomo, 19–21, 19 n.62
Bellano, Bartolommeo, 54 n.153
Berlin, Staatliche Museen (Berlin-Dahlem), Pazzi Madonna (Donatello), 40 n.111
Bernini, Gianlorenzo, 1, 2 n.10
Bertoldo di Giovanni, 54 n.153
Billi: see Libro di Antonio Billi
Birth of the Virgin, by Antonio del Pollaiuolo, Florence, Museo dell'Opera del Duomo, 36 n.100
Birth of the Virgin, by Pietro Lorenzetti, Siena, Museo dell'Opera del Duomo, 38 n.103
Borso d'Este, Monument to, by Donatello (unexecuted), 29, 29 n.81
Boston, Isabella Stuart Gardner Museum, Death of Lucretia (Botticelli), 25
Botticelli, Sandro, 25
Bronze Doors, by Donatello, Florence, Old Sacristy, S. Lorenzo, 7f.
Bronze Doors, by Donatello, Siena, Cathedral (unexecuted), 50 n.143
Brunelleschi, Filippo, 9 n.29, 35, 37 n.103, 41 n.111
Bulgarini, Pietro, Tomb Slab of (anonymous), Siena, Ospedale, 48 n.134

Camillus, by Domenico Ghirlandaio, Florence, Palazzo Vecchio, 18 n.56
Campanile, Florence, 14, 15 n.48 (see also Prophets from the Campanile)
Campanile, Florence, bridge to Cathedral, 24 n.67
"Cantoria," by Donatello, Florence, Museo dell'Opera del Duomo, 8, 8 n.28, 42–44, 44 n.120, 45 n.121, 49 n.139
Cantoria, by Luca della Robbia, Florence, Museo dell'Opera del Duomo, 43
Castagno, Andrea del, 18 n.56
Cathedral of Florence, drawing of façade, by Bernardino Poccetti, 10 n.32, 22 n.65
Cathedral of Siena, façade decoration, 5–7 (see also Siena, Museo dell'Opera del Duomo)
Cavalcanti Annunciation, by Donatello, Florence, S. Croce, 41f., 41 n.112, 42 nn.113 and 114, 45 n.121
Cesari, Alessio, Tomb Slab of (anonymous), Siena, S. Francesco, 48 n.134
Charles V, portrait of (woodcut), 3 n.11
Charles of Calabria, Monument of, by Tino di Camaino, Naples, S. Chiara, 1 n.7
Chartres, Cathedral, St. Theodore, 6 n.21
Chellini Madonna, by Donatello, London, Victoria & Albert Museum, 47 n.133
Christ as Man of Sorrows (anonymous), Siena, Church of the Servi, 48, 48 n.135
Christ Before Pilate and Christ Before Caiaphas, by Donatello, Florence, S. Lorenzo, 56 n.154
Cinelli, Giovanni, 15
Ciuffagni, Bernardo, 11, 11 n.35
Colleone, Bartolommeo, Equestrian Monument of, by Andrea del Verrocchio, Venice, Campo SS. Giovanni e Paolo, 1

Cornaro Chapel, by Gianlorenzo Bernini, Rome, S. Maria della Vittoria, 2 n.10
Corner, Marco and Giorgio, Tombs of, by Pietro Lombardo (school of), Venice, SS. Apostoli, 1 n.7
Coscia, Baldassare (Pope John XXIII), Tomb of, by Donatello and Michelozzo, Florence, Baptistry, xii n.3, 8, 8 n.28
Creation, by Lorenzo Ghiberti, Florence, Baptistry, Gates of Paradise, 41 n.111
Crivelli, Giovanni, Tomb Slab of, by Donatello, Rome, S. Maria in Aracoeli, 31 n.86, 33
Crucifix, by Donatello, Padua, San'Antonio, 28, 29 n.80, 46

Damianus, 3f., 3 n.12
David, by Gianlorenzo Bernini, Rome, Galleria Borghese, 1
David, by Donatello, Florence, Museo Nazionale, 14, 24–28, 24 nn.68 and 69, 25 n.70, 26 nn.73–75, 27 nn.76 and 77, 28 n.78, 30, 41
David, by Michelangelo, Florence, Accademia, 15
David, by Giovanni Pisano, Siena, Museo dell'Opera del Duomo, 6 n.22
David, by Antonio Rossellino: see Martelli David
David, by Andrea del Verrocchio, Florence, Museo Nazionale, xii n.4
Death of Lucretia, by Sandro Botticelli, Boston, Isabella Stewart Gardner Museum, 25
Decollation of St. John the Baptist, by Andrea del Verrocchio, Florence, Museo dell'Opera del Duomo, 36 n.100
De Braye: see Guillaume
Descent into Limbo, by Donatello, Florence, S. Lorenzo, 50 n.143, 51–53
Desiderio da Settignano, 1 n.7, 25 n.70
Domenico di Paris, 29
Donatello
  Works: Berlin, Staatliche Museen (Berlin-Dahlem), Pazzi Madonna, 40 n.111; Florence, Baptistry, Tomb of Baldassare Coscia (Pope John XXIII), xii n.3, 8, 8 n.28; St. Mary Magdalen: see Museo dell'Opera del Duomo; Campanile Prophets: see Museo dell'Opera del Duomo; Cathedral, Joshua (lost), 25 n.71; St. John the Evangelist: see Museo dell'Opera del Duomo; Mercato Vecchio, Dovizia (lost), 25, 25 n.71; Museo dell'Opera del Duomo, Campanile Prophets, 14, 19f., 19 n.62, 22f.; Abraham and Isaac, 19, 19 n.62, 21; Bearded Prophet, 19–21, 19 n.62, 23; Beardless Prophet, 19–21, 19 n.62; Habbakuk: see "Jeremiah"; "Jeremiah," 19 n.62, 22–24, 23 n.66, 24 n.67; Lo Zuccone, 16 n.48, 19 n.62, 22–24, 22 n.65, 24 n.67; "Cantoria," 8, 8 n.28, 42–44, 44 n.120, 45 n.121, 49 n.139; St. John the Evangelist, 10–14, 10 n.33, 11 n.36, 13 n.41, 30; St. Mary Magdalen, 29 n.83; Museo Nazionale (Bargello), "Atys-Amorino," 8, 28 n.79; David, 14, 24–28, 24 nn.68 and 69, 25 n.70, 26 nn.73–75, 27 nn.76 and 77, 28 n.78, 30, 41; St. George, 17f., 17 n.51, 18 n.56, 19, 24; St. George and the Dragon, 31 n.84, 35 n.96; Or San Michele, St. George: see Museo dell'Opera del Duomo; St. George and the Dragon: see Museo dell'Opera del Duomo; Niche for St. Louis, 19; St. Mark, 10 n.33, 14–18, 14 n.45, 15 n.48, 16 n.50, 17 n.51; St. Louis: see S. Croce, Florence; Palazzo Vecchio, Judith and Holofernes, 25, 25 n.71, 28 n.78; S. Croce, Cavalcanti Annunciation, 41f., 41 n.112, 42 nn.113 and 114, 45 n.121; St. Louis, xi n.3, 14, 14 n.44, 16 n.48, 17–19, 17 n.51, 18 nn.58 and 60, 19 n.61; S. Lorenzo, Old Sacristy, Bronze Doors, 7f.; Evangelists (relief tondi), 7–9, 44f., 45 nn.121 and 123; Legend of St. John the Evangelist (relief tondi), 7–9, 9 n.29, 38 n.104, 44–46; Assumption of St. John the Evangelist (tondo), 9 n.29, 46 n.126; The Liberation from the Boiling in Oil (tondo), 9 n.29, 46; The Raising of Drusiana (tondo), 46; The Vision of St. John on Patmos (tondo), 9 n.29, 46, 46 n.126; SS. Cosmas and Damian, SS. Stephen and Lawrence (overdoor reliefs), 8, 45 n.121; Pulpits, 9, 49–51, 49 n.141, 50 nn.142 and 143, 54 n.153, 56 n.154; "Passion" Pulpit, 50 n.143, 56 n.154; Christ Before Pilate and Caiaphas, 56 n.154; "Resurrection" Pulpit, 43, 45 n.121, 50 n.143, 51–56, 51 n.145; Ascension (Christ's Last Appearance to the Apostles), 51–54; Descent into Limbo, 50 n.143, 51–53; Martyrdom of St. Lawrence, 49 n.141, 51f., 55f., 56 n.154; Pentecost, 50 n.143, 51, 52 n.149, 54f.; Resurrection, 50 n.143, 51–53; Three Maries of the Tomb, 50 n.143, 51, 54f.; Lille, Palais des Beaux-Arts, Musée Wicar, Feast of Herod, 8; London, Victoria & Albert Museum, Ascension of Christ and Delivery of the Keys, 47 n.128; Chellini Madonna, 47 n.133; Modena, Monument to Borso d'Este (unexecuted), 29, 29 n.81; Padua, Piazza del Santo, Equestrian Monument to Gattamelata, 8, 8 n.28, 25, 25 n.71, 28f., 29 n.81, 46; San'Antonio (Il Santo), Crucifix, 28, 29 n.80, 46; High Altar, 28, 29 n.80, 46, 47 n.127, 50 n.143, 56 n.154; Miracles of St. Anthony, 45 n.121, 46f.; The Healing of the Irascible Son, 37 n.101,

47 n.129; St. Prosdocimus, 18 n.60; Prato, Cathedral, Pulpit (with Michelozzo), 42–44, 43 n.115; Rome, S. Maria in Aracoeli, Tomb Slab of Giovanni Crivelli, 31 n.86, 33; Siena, Baptistry, Feast of Herod, xiii n.5, 30f., 34–40, 35 nn.96 and 97, 36 nn.98 and 99, 38 n.106, 39 nn.107 and 108, 43, 48, 52 n.147; Cathedral, Bronze Doors (unexecuted), 50 n.143; Madonna del Perdono, 47f., 47 n.130; Tomb Slab of Giovanni Pecci, 31–34, 31 n.86, 34 n.94, 39 n.108, 40f., 43, 47 n.128, 48; St. John the Baptist, 29 n.83; Venice, S. Maria Gloriosa dei Frari, St. John the Baptist, 28 n.79, 29 n.83
Donatello, dating of works, 10 n.31; Sienese followers of, 34, 48, 48 nn.134 and 135; stay in Padua, 28, 46
Dovizia, by Donatello (lost), formerly Florence, Mercato Vecchio, 25, 25 n.71

Effects of Good Government in the Country, by Ambrogio Lorenzetti, Siena, Palazzo Publico, 26 n.74
Evangelists, formerly Cathedral of Florence (façade): see Florence, Museo dell'Opera del Duomo (see also individual evangelists)
Evangelists (relief tondi), by Donatello, Florence, Old Sacristy, S. Lorenzo, 7–9, 44f., 45 nn.121 and 123

Feast of Herod, by Donatello, Lille, Palais des Beaux-Arts, Musée Wicar, 8
Feast of Herod, by Donatello, Siena, Baptistry, xiii n.5, 30f., 34–40, 35 nn.96 and 97, 36 nn.98 and 99, 38 n.106, 39 nn.107 and 108, 43, 48, 52 n.147
Felici, Cristoforo, Monument of, by Urbano da Cortona, Siena, S. Francesco, 48f., 49 nn.137–140
Ferrara, Monument to Niccolò III d'Este (Niccolò Baroncelli and Domenico di Paris) (destroyed), 29
Florence, Accademia, David (Michelangelo), 15; Baptistry, Tomb of Baldassare Coscia (Pope John XXIII) (Donatello and Michelozzo), xii n.3, 8, 8 n.28; Gates of Paradise (Ghiberti), 40 n.111; Creation (Ghiberti), 41 n.111; Story of Isaac, Jacob and Esau (Ghiberti), 41 n.111; St. Mary Magdalen (Donatello): see Museo dell'Opera del Duomo; Seven Sacraments (Andrea Pisano et al.): see Museo dell'Opera del Duomo; Cathedral, 10f., 10 n.32, 13 n.41, 22; Joshua (Donatello) (lost), 25 n.71; Galleria degli Uffizi, Pippo Spano (Castagno), 18 n.56; Mercato Vecchio, Dovizia (Donatello) (lost), 25, 25 n.71; Museo Bardini, Tomb Slab of an Unknown Friar (anonymous), 34; Museo dell'Opera del Duomo, Birth of the Virgin (Pollaiuolo), 36 n.100; "Cantoria" (Donatello), 8, 8 n.28, 42–44, 44 n.120, 45 n.121, 49 n.139; Cantoria (Luca della Robbia), 43; Decollation of St. John the Baptist (Verrocchio), 36 n.100; Drawing of the façade of the Cathedral, Florence (Poccetti), 10 n.32, 22 n.65; Evangelists (Ciuffagni, Donatello, Lamberti, Nanni), 11 (see also individual figures); St. John the Evangelist (Donatello), 10–14, 10 n.33, 11 n.36, 13 n.41, 30; St. Luke the Evangelist (Nanni), 11; St. Mark the Evangelist (Lamberti), 11; St. Matthew the Evangelist (Ciuffagni), 11, 11 n.35; Prophets (Donatello), 14, 19f., 19 n.62, 22f. (see also individual figures); Abraham and Isaac (Donatello), 19, 19 n.62, 21; Bearded Prophet (Donatello), 19–21, 19 n.62, 23; Beardless Prophet (Donatello), 19–21, 19 n.62; Habbakuk (Donatello): see "Jeremiah"; "Jeremiah" (Donatello), 19 n.62, 22–24, 23 n.66, 24 n.67; Lo Zuccone (Donatello), 16 n.48, 19 n.62, 22–24, 22 n.65, 24 n.67; St. Mary Magdalen (Donatello), 29 n.83; Seven Sacraments (Andrea Pisano et al.), 24 n.67; Museo Nazionale (Bargello), "Atys-Amorino" (Donatello), 8, 28 n.79; David (Donatello), 14, 24–28, 24 nn.68 and 69, 25 n.70, 26 nn.73–75, 27 nn.76 and 77, 28 n.78, 30, 41; David (Verrocchio), xii n.4; St. George (Donatello), 17f., 17 n.51, 18 n.56, 19, 24; St. George and the Dragon (relief) (Donatello), 31 n.84, 35 n.96; Or San Michele, 14, 15, 24 n.67; Niche for St. Louis (Donatello), 19; St. Eligius (Nanni), 18 n.59; St. George (Donatello): see Museo Nazionale; St. Mark (Donatello), 10 n.33, 14–18, 14 n.45, 15 n.48, 16 n.50, 17 n.51; Quattro Santi Coronati (Nanni), 15; Palazzo Medici, placement in courtyard of Donatello's David, 25; Palazzo Vecchio, Camillus (Ghirlandaio), 18 n.56; Judith and Holofernes (Donatello), 25, 25 n.71, 28 n.78; S. Croce, Cavalcanti Annunciation (Donatello), 41f., 41 n.112, 42 nn.113 and 114, 45 n.121; Tomb of Carlo Marsuppini (Desiderio), 1 n.7; St. Louis (Donatello), xi n.3, 14, 14 n.44, 16 n.48, 17–19, 17 n.51, 18 nn.58 and 60, 19 n.61; Tomb Slab of Leonardo and Elizabetta Tedaldi (A. Rossellino), 34 n.94; Madonna and Child (A. Rossellino), 40 n.110; S. Lorenzo, Annunciation (Fra F. Lippi), 38 n.103; Choir, 51; High Altar (unexecuted), 50 n.143; Old Sacristy decoration (Donatello), 7–9, 9 n.29, 38 n.104, 44–46, 45 nn.121 and 123, 46

n.126; Bronze Doors (Donatello), 7f.; Evangelists (relief tondi) (Donatello), 7–9, 44f., 45 nn.121 and 123; Lavabo (Verrocchio or Desiderio), 25 n.70, 27 n.77; Legend of St. John the Evangelist (relief tondi) (Donatello), 7–9, 9 n.29, 38 n.104, 44–46; Assumption of St. John the Evangelist (tondo) (Donatello), 9 n.29, 46 n.126; Liberation from the Boiling in Oil (tondo) (Donatello), 9 n.29, 46; Raising of Drusiana (tondo) (Donatello), 46; Vision of St. John on Patmos (tondo) (Donatello), 9 n.29, 46, 46 n.126; SS. Cosmas and Damian and SS. Stephen and Lawrence (overdoor reliefs) (Donatello), 8, 45 n.121; Pulpits (Donatello et al.), 9, 49–51, 49 n.141, 50 nn.142 and 143, 54 n.153, 56 n.154; "Passion" Pulpit (Donatello), 50 n.143, 56 n.154; Christ Before Pilate and Christ Before Caiaphas (Donatello), 56 n.154; "Resurrection" Pulpit (Donatello), 43, 45 n.121, 50 n.143, 51–56, 51 n.145; Ascension (Christ's Last Appearance to the Apostles) (Donatello), 51–54; Descent into Limbo (Donatello), 50 n.143, 51–53; Martyrdom of St. Lawrence (Donatello), 49 n.141, 51f., 55f., 56 n.154; Pentecost, 50 n.143, 51, 52 n.149, 54f.; Resurrection (Donatello), 50 n.143, 51–53; Three Maries at the Tomb (Donatello), 50 n.143, 51, 54f.; S. Maria Novella, Trinity (Masaccio), 9, 37, 38 n.103; S. Miniato, Chapel of the Cardinal of Portugal, Madonna and Child (Antonio Rossellino), 40 n. 110; Uffizi, Pippo Spano (Castagno), 18 n.56
Friar, Tomb Slab of Unknown (anonymous), Florence, Museo Bardini, 34

Gabriel, by Giovanni Pisano, Pistoia, S. Andrea, 6 n.23
Gates of Paradise, by Ghiberti, Florence, Baptistry, 41 n.111
Gattamelata, Equestrian Monument to, by Donatello, Padua, Piazza del Santo, 8, 8 n.28, 25, 25 n.71, 28f., 29 n.81, 46
Geminus, 3 n.12
Ghiberti, Lorenzo, 41 n.111
Ghini, Simone, 33 n.91
Ghirlandaio, Domenico, 18 n.56
Gothic sculpture, 6, 6 n.21
Guillaume Cardinal de Braye, Monument to, by Arnolfo di Cambio, Orvieto, S. Domenico, 1 n.7

Habbakuk, by Donatello: see "Jeremiah"
Habbakuk, by Giovanni Pisano, Siena, Museo dell'Opera del Duomo, 6 n.22
Healing of the Irascible Son, by Donatello, Florence, S. Lorenzo, 37 n.101, 47 n.129
Heron of Alexander, 3 n.12
High Altar, by Donatello (not completed), Florence, S. Lorenzo, 50 n.143
High Altar, by Donatello, Padua, San'Antonio, 28, 29 n.80, 46, 47 n.127, 50 n.143, 56 n.154
Holbein, Hans, the younger, 2, 5

Ideal point of view, 8
Isaac, Jacob and Esau, Story of, by Ghiberti, Florence, Gates of Paradise, Baptistry, 41 n.111

Jacopo della Quercia, 16 n.50
"Jeremiah," by Donatello, Florence, Museo dell'Opera del Duomo, 19 n.62, 22–24, 23 n.66, 24 n.67
Joshua, by Donatello (lost), formerly Florence, Cathedral, 25 n.71
Judith and Holofernes, by Donatello, Florence, Palazzo Vecchio, 25, 25 n.71, 28 n.78

Konrad, Master, 5 n.18

Lamberti, Niccolò di Pietro, 11
Lavabo, by Verrocchio or Desiderio da Settignano, Florence, Old Sacristy, S. Lorenzo, 25 n.70, 27 n.77
Legend of St. John the Evangelist (relief tondi), by Donatello, Florence, Old Sacristy, S. Lorenzo, 7–9, 9 n.29, 38 n.104, 44–46
Leonardo da Vinci, 3 n.11, 13, 13 n.40
Liberation from the Boiling in Oil (tondo), by Donatello, Florence, Old Sacristy, S. Lorenzo, 9 n.29, 46
Libro di Antonio Billi, 43, 43 n.116, 44
Lille, Palais des Beaux-Arts, Musée Wicar, Feast of Herod (Donatello), 8
Lippi, Fra Filippo, 38 n.103
Lombardo, Pietro (school of), 1 n.7
London, National Gallery, Ambassadors (Holbein), 2, 5; Victoria & Albert Museum, Ascension of Christ and Delivery of the Keys (Donatello), 47 n.128; Chellini Madonna (Donatello), 47 n.133
Lorenzetti, Ambrogio, 26 n.74
Lorenzetti, Pietro, 38 n.103
Lucca, Cathedral, Apostle (Jacopo della Quercia), 16 n.50; S. Frediano, St. Lawrence (Jacopo della Quercia), 16 n.50

Madonna and Child, by Donatello: see Chellini Madonna, Madonna del Perdono, Pazzi Madonna

Madonna and Child, by Antonio Rossellino, Florence, S. Croce, 40 n.110, S. Miniato, Chapel of the Cardinal of Portugal, 40 n.110
Madonna del Perdono, by Donatello, Siena, Cathedral, 47f., 47 n.130
Marsuppini, Carlo, Tomb of, by Desiderio da Settignano, Florence, S. Croce, 1 n.7
Martelli David, by Antonio Rossellino, Washington, National Gallery, 25, 25 n.72
Martin V, Pope, Tomb of (school of Donatello), Rome, S. Giovanni in Laterano, 31 n.86, 33, 33 n.91
Martyrdom of St. Lawrence, by Donatello, Florence, S. Lorenzo, 49 n.141, 51f., 55f., 56 n.154
Masaccio, 9, 37, 38 n.103
Massacre of the Innocents, by Giovanni Pisano, Pistoia, S. Andrea, 6 n.23
Medici Collection, sardonyx, 27
Medici, Cosimo de', 51
Michelangelo
  Works: Florence, Accademia, David, 15; Rome, S. Pietro in Vincoli, Moses, 4f., 4 n.15, 11 n.36; Vatican, St. Peter's, Pietà, 11
Michelozzo, 8 n.28, 13, 13 n.115
Miracles of St. Anthony, by Donatello, Padua, San'Antonio, 45 n.121, 46f.
Miriam, by Giovanni Pisano, Siena, Museo dell'Opera del Duomo, 6f., 6 nn.22 and 23
Moses, by Michelangelo, Rome, S. Pietro in Vincoli, 4f., 4 n.15, 11 n.36

Nanni di Banco, 11, 15, 18 n.59
Naples, S. Chiara, Monument of Charles of Calabria (Tino di Camaino) 1 n.7
Niccolò III d'Este, Monument to (Niccolò Baroncelli and Domenico di Paris), Ferrara (destroyed), 29
Niche for St. Louis, by Donatello, Florence, Or San Michele, 19

Optical corrections in architecture, 3
Optical corrections in colossal figures, 3f., 13
Optical corrections, definition of, 1–5
Optical corrections, scholarly controversy on, xi
Optics, by Damianus, 3, 3 n.12
Optics, medieval, 41 n.111
Or San Michele, Florence, 14, 15, 24 n.67
Orvieto, S. Domenico, Tomb Monument of Guillaume Cardinal de Braye (Arnolfo di Cambio), 1 n.7
Osservanza (Siena), Museo dell' Osservanza, Tomb Slab of Nicolò Piccolomini, 48 n.134
Otto, Master, 5f.

Padua, Piazza del Santo, Equestrian Monument to Gattamelata (Donatello), 8, 8 n.28, 25, 25 n.71, 28f., 29 n.81, 46; San'Antonio, Crucifix (Donatello), 28, 29 n.80, 46; High Altar (Donatello), 28, 29 n.80, 46, 47 n.127, 50 n.143, 56 n.154; Miracles of St. Anthony (Donatello), 45 n.121, 46f.; The Healing of the Irascible Son (Donatello), 37 n.101, 47 n.129; St. Prosdoscimus (Donatello), 18 n.60
Parthenon, pedimental sculpture, 2
"Passion" Pulpit, by Donatello, Florence, S. Lorenzo, 50 n.143, 56 n.154
Pazzi Madonna, by Donatello, Berlin, Staatliche Museen (Berlin-Dahlem), 40 n.111
Pecci, Giovanni, Tomb Slab of, by Donatello, Siena, Cathedral, 31–34, 31 n.86, 34 n.94, 39 n.108, 40f., 43, 47 n.128, 48
Peckham, John, 41 n.111
Pentecost, by Donatello, Florence, S. Lorenzo, 50 n.143, 51, 52 n.149, 54f.
Petroni, Riccardo Cardinal, Tomb Monument of, by Tino di Camaino, Siena, Cathedral, 51 n.145
Photographic reproduction of art, xiif., 11 n.36, 15 n.48, 18 n.58, 39 n.108
Piccolomini, Nicolò, Tomb Slab of, Osservanza (Siena), Museo dell' Osservanza, 48 n.134
Pietà, by Michelangelo, Vatican, St. Peter's, 11
Pinnacle figures, by Giovanni Pisano, Pisa, Baptistry, 7 n.23
Pippo Spano, by Castagno, Florence, Uffizi, 18 n.56
Pisa, Baptistry, pinnacle figures (G. Pisano), 7 n.23; Cathedral, Pulpit (G. Pisano), 6
Pisano, Andrea, 22
Pisano, Giovanni, 5–7, 6 nn.22 and 23, 58; Works: Pisa, Baptistry, Pinnacle figures, 7 n.23; Cathedral, Pulpit, 6; Pistoia, S. Andrea, Pulpit, 6; Gabriel, 6 n.23; Massacre of the Innocents, 6 n.23; Siena, Cathedral: see Museo dell'Opera del Duomo; Museo dell'Opera del Duomo, David, 6 n.22; Habbakuk, 6 n.22; Miriam, 6, 6 nn.22 and 23; Plato, 6 n.22; Solomon, 6 n.22
Pistoia, S. Andrea, Pulpit (G. Pisano), 6; Gabriel (G. Pisano), 6 n.23; Massacre of the Innocents (G. Pisano), 6 n.23
Plato, 3f., 4 n.1, 58
Plato, by Giovanni Pisano, Siena, Museo dell'Opera del Duomo, 6 n.22
Poccetti, Barnardino, 10 n.32, 22 n.65
Pollaiuolo, Antonio del, 5, 5 n.19, 36 n.100
Pozzo, Fra Andrea, 13
Prato, Cathedral, Pulpit (Donatello and Michelozzo), 42–44, 43 n.115
Prophets from the Campanile of the Cathe-

dral of Florence, by Donatello, 14, 19f., 19 n.62, 22f. (see also individual figures)
Pulpit, by Giovanni Pisano, Pistoia, S. Andrea, 6
Pulpit, by Giovanni Pisano, Pisa, Cathedral, 6
Pulpit, by Donatello and Michelozzo, Prato, Cathedral, 42–44, 43 n.115
Pulpits, by Donatello (et al.), Florence, S. Lorenzo, 9, 49–51, 49 n.141, 50 nn.142 and 143, 54 n.153, 56 n.154 (see also individual pulpits)

Quattro Santi Coronati, by Nanni di Banco, Florence, Or San Michele, 15
Quercia, Jacopo della: see Jacopo

Raising of Drusiana, by Donatello, Florence, Old Sacristy, S. Lorenzo, 46
Resurrection, by Donatello, Florence, S. Lorenzo, 50 n.143, 51–53
"Resurrection" Pulpit, by Donatello, Florence, S. Lorenzo, 43, 45 n.121, 50 n.143, 51–56, 51 n.145
Robbia, Luca della, 43
Rome, Galleria Borghese, David (Bernini), 1; S. Ignazio, St. Ignatius Entering Paradise (Pozzo), 13; S. Giovanni in Laterano, Tomb of Pope Martin V (school of Donatello), 31 n.86, 33, 33 n.91; S. Maria in Aracoeli, Tomb Slab of Giovanni Crivelli (Donatello), 31 n.86, 33; S. Maria della Vittoria, Cornaro Chapel (Bernini), 2 n.10; S. Pietro in Vincoli, Moses (Michelangelo), 4f., 4 n.15, 11 n.36
Rossellino, Antonio, 25 n.72, 34 n.94, 40 n.110
Rossellino, Bernardo, 25 n.72

SS. Cosmas and Damian, Stephen and Lawrence, by Donatello (overdoor reliefs), Florence, Old Sacristy, S. Lorenzo, 8, 45 n.121
St. Eligius, by Nanni di Banco, Florence, Or San Michele, 18 n.59
St. George, by Donatello, Florence, Museo Nazionale, 17f., 17 n.51, 18 n.56, 19, 24
St. George and the Dragon, by Donatello, Florence, Museo Nazionale, 31 n.84, 35 n.96
St. Ignatius Entering Paradise, by Fra Andrea Pozzo, Rome, S. Ignazio, 13
St. John the Baptist, by Donatello, Siena, Cathedral, 29 n.83
St. John the Baptist, by Donatello, Venice, S. Maria Gloriosa dei Frari, 28 n.79, 29 n.83
St. John the Evangelist, by Donatello, Florence, Museo dell'Opera del Duomo, 10–14, 10 n.33, 11 n.36, 13 n.41, 30
St. Lawrence, by Jacopo della Quercia, Lucca, S. Frediano, 17 n.50
St. Louis, by Donatello, Florence, S. Croce (Museum), xi n.3, 14, 14 n.44, 16 n.48, 17–19, 17 n.51, 18 nn.58 and 60, 19 n.61
St. Louis, Niche for, by Donatello, Florence, Or San Michele, 19
St. Luke, by Nanni di Banco, Florence, Museo dell'Opera del Duomo, 11
St. Mark, by Donatello, Florence, Or San Michele, 10 n.33, 14–18, 14 n.45, 15 n.48, 16 n.50, 17 n.51
St. Mark, by Niccolò Lamberti, Florence, Museo dell'Opera del Duomo, 11
St. Mark, Scenes from the Life of, by Jacopo Sansovino, Venice, S. Marco, 5 n.17
St. Mary Magdalen, by Donatello, Florence, Museo dell'Opera del Duomo, 29 n.83
St. Matthew, by Bernardo Ciuffagni, Florence, Museo dell'Opera del Duomo, 11, 11 n.35
St. Prosdoscimus, by Donatello, Padua, San'Antonio, 18 n.60
St. Theodore, Chartres, Cathedral, 6 n.21
Sansovino, Jacopo, 5 n.17
Schoen, Erhard, 3 n.11
Seven Sacraments, by Andrea Pisano et al., Florence, Museo dell'Opera del Duomo, 24 n.67
Siena, Baptistry, Feast of Herod (Donatello), xiii n.5, 30f., 34–40, 35 nn.96 and 97, 36 nn.98 and 99, 38 n.106, 39 nn.107 and 108, 43, 48, 52, n.147; Cathedral, façade decoration, 5–7 (see also Museo dell'Opera del Duomo); Cappella del Voto, 47; Chapel of St. Calixtus, 47; Madonna del Perdono (Donatello), 47f., 47 n.130; Pecci, Giovanni, Tomb Slab of (Donatello), 31–34, 31 n.86, 34 n.94, 39 n.108, 40f., 43, 47 n.128, 48; Petroni, Riccardo Cardinal, Tomb of (Tino di Camaino), 51 n.145; St. John the Baptist (Donatello), 29 n.83; Museo dell'Opera del Duomo, Birth of the Virgin (P. Lorenzetti), 38 n.103; David (G. Pisano), 6 n.22; Habbakuk (G. Pisano), 6 n.22; Miriam (G. Pisano), 6f., 6 nn.22 and 23; Plato (G. Pisano), 6 n.22; Solomon (G. Pisano), 6 n.22; Ospedale, Bulgarini, Pietro, Tomb Slab of (anonymous), 48 n.134; Palazzo Publico, Effects of Good Government in the Country (A. Lorenzetti), 26 n.74; S. Francesco, Cesari, Alessio, Tomb Slab of (anonymous), 48 n.134; Felici, Cristoforo, Monument of (Urbano da Cortona), 48f., 49 nn.137–140; Servi, Church of the, Christ as Man of Sorrows (anonymous), 48, 48 n.135
Simone, "brother" of Donatello, 33, 33 n.91
Solomon, by Giovanni Pisano, Siena, Museo dell'Opera del Duomo, 6 n.22
Sophist, by Plato, 3f.

Technique of carving life-sized figures, 4f.
Tedaldi, Leonardo and Elizabetta, Tomb Slab of, by Antonio Rossellino, Florence, S. Croce, 34 n.94
Ten Books of Architecture, by Vitruvius, 3, 3 n.13
Three Maries at the Tomb, by Donatello, Florence, S. Lorenzo, 50 n.143, 51, 54f.
Tino di Camaino, 1 n.7, 51 n.145
Trinity, by Masaccio, Florence, S. Maria Novella, 9, 37, 38 n.103

Urbano da Cortona, 48f., 48 n.136, 49 nn.139 and 140

Variable points of view, 11–14
Vasari, Giorgio, 14 n.45, 15, 25 n.70, 33 n.91, 43 n.117, 44
Vatican, St. Peter's, Pietà (Michelangelo), 11
Venice, Campo SS. Giovanni e Paolo, Equestrian Monument to Bartolommeo Colleone (Verrocchio), 1; S. Marco, Scenes from the Life of St. Mark (J. Sansovino), 5 n.17; S. Maria Gloriosa dei Frari, St. John the Baptist (Donatello), 28 n.79, 29 n.83; SS. Apostoli, Tombs of Marco and Giorgio Corner (school of Pietro Lombardo), 1 n.7
Verrocchio, Andrea del, xii n.4, 1, 25 n.70, 36 n.100
Visconti, Gianmaria, 27 n.76
Vision of St. John on Patmos, by Donatello, Florence, Old Sacristy, S. Lorenzo, 9 n.29, 46, 46 n.126
Vitruvius, 3, 3 n.13

Washington, D.C., National Gallery, Martelli David (A. Rossellino), 25, 25 n.72
Wolfhart von Roth, Tomb of, by Masters Otto and Konrad, Augsburg, Cathedral, 5f., 5 n.19, 6 n.20

Zuccone, Lo, by Donatello, Florence, Museo dell'Opera del Duomo, 16 n.48, 19 n.62 22–24, 22 n.65, 24 n.67

PUBLICATIONS

OF

The American Philosophical Society

The publications of the American Philosophical Society consist of PROCEEDINGS, TRANSACTIONS, MEMOIRS, and YEAR BOOK.

THE PROCEEDINGS contains papers which have been read before the Society in addition to other papers which have been accepted for publication by the Committee on Publications. In accordance with the present policy one volume is issued each year, consisting of four numbers, and the price is $20.00 net per volume. Individual copies of the PROCEEDINGS are $10.00.

THE TRANSACTIONS, the oldest scholarly journal in America, was started in 1769. In accordance with the present policy each annual volume is a collection of monographs, each issued as a part. The current annual subscription price is $60.00 net per volume. Individual copies of the TRANSACTIONS are offered for sale.

Each volume of the MEMOIRS is published as a book. The titles cover the various fields of learning; most of the recent volumes have been historical. The price of each volume is determined by its size and character, but subscribers are offered a 20 per cent discount.

The YEAR BOOK is of considerable interest to scholars because of the reports on grants for research and to libraries for this reason and because of the section dealing with the acquisitions of the Library. In addition it contains the Charter and Laws, and lists of members, and reports of committees and meetings. The YEAR BOOK is published about April 1 for the preceding calendar year. The current price is $8.50.

An author desiring to submit a manuscript for publication should send it to the Editor, American Philosophical Society, 104 South Fifth Street, Philadelphia, Pa. 19106.